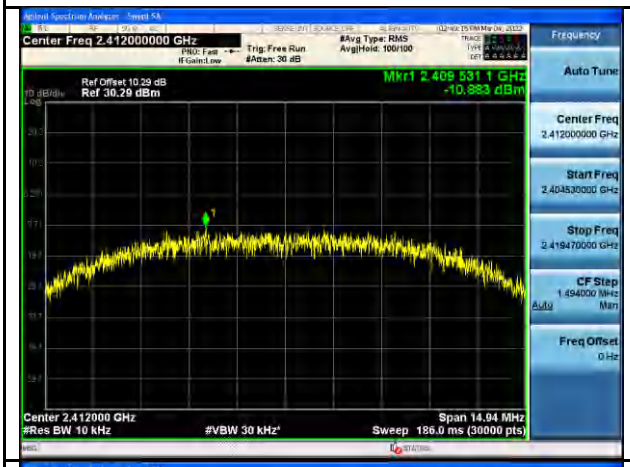
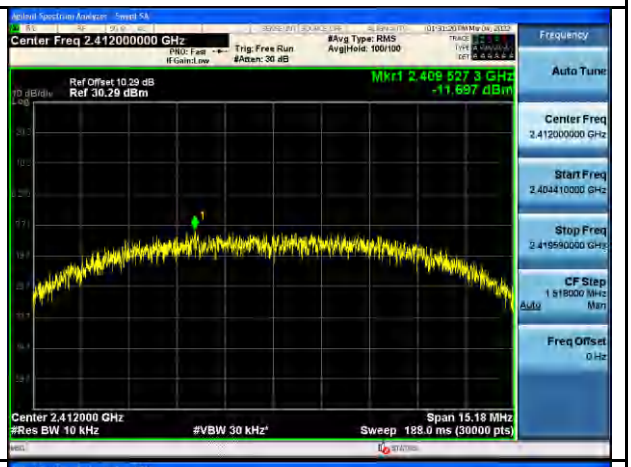
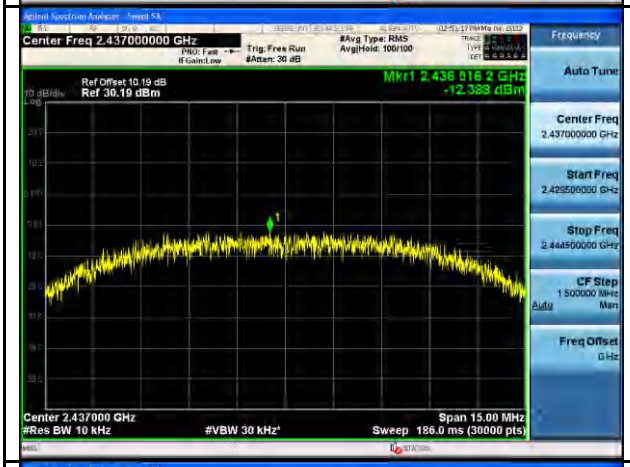
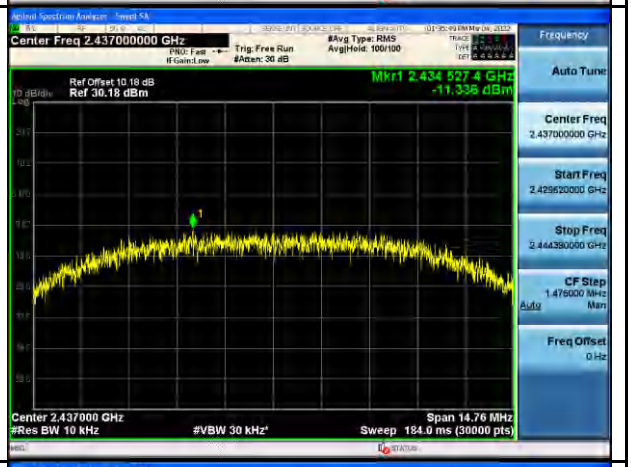
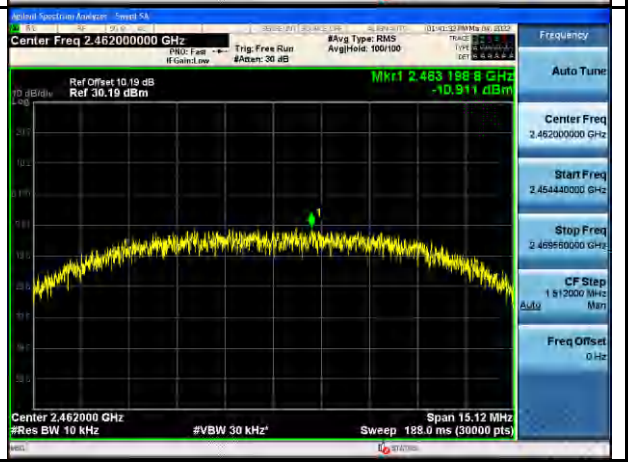
Appendix B: Test Results of Wi-Fi 802.11 b/g/n

Appendix B.1: Test Results of Conducted Power Spectral Density

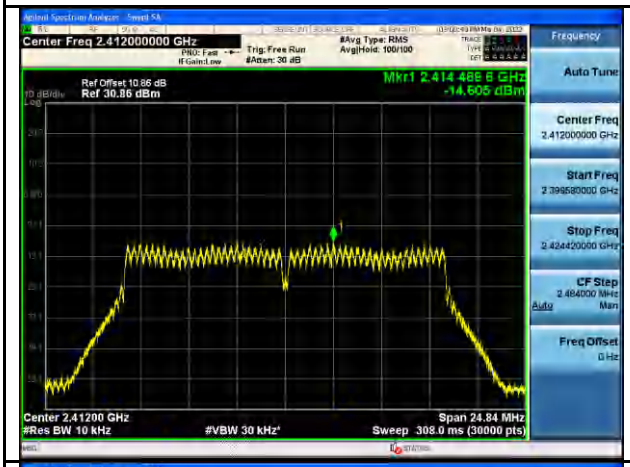
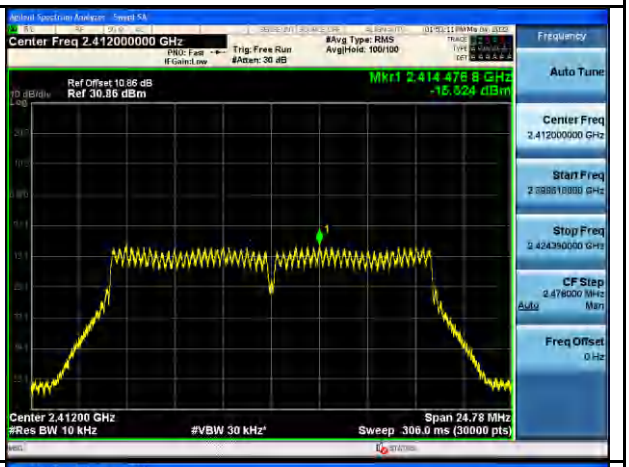
Wi-Fi Module 1 (model: nxp8997):

Test Mode	Data Rate	Test Channel (MHz)	Measured Conducted Power Spectral Density(dBm)		Limit (dBm/3kHz)
			ANT1	ANT2	
802.11b	1 Mbps	2412	-10.883	-11.697	< 8.0
		2437	-12.388	-11.336	
		2462	-10.132	-10.911	
802.11g	6 Mbps	2412	-14.605	-15.524	
		2437	-14.984	-14.522	
		2462	-13.856	-14.173	
802.11n (HT20)	MCS0	2412	-20.787	-22.024	
		2437	-15.420	-14.558	
		2462	-21.418	-21.857	
802.11n (HT40)	MCS0	2422	-26.443	-26.646	
		2437	-16.999	-16.437	
		2452	-26.200	-26.929	
Maximum Measured Value			-10.132	-10.911	

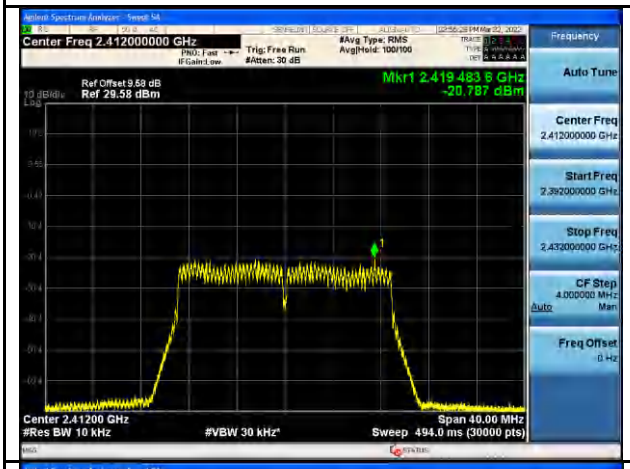
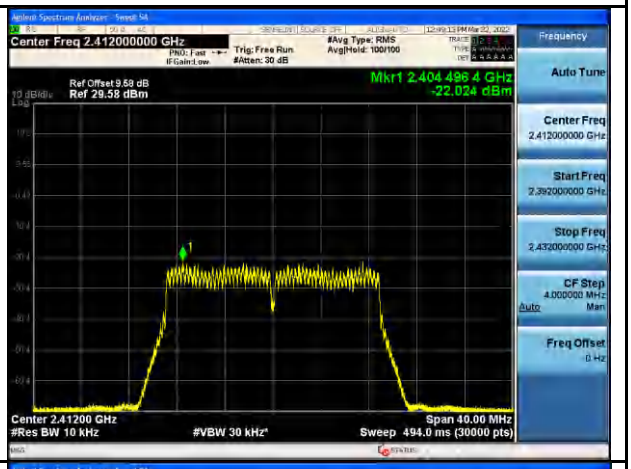
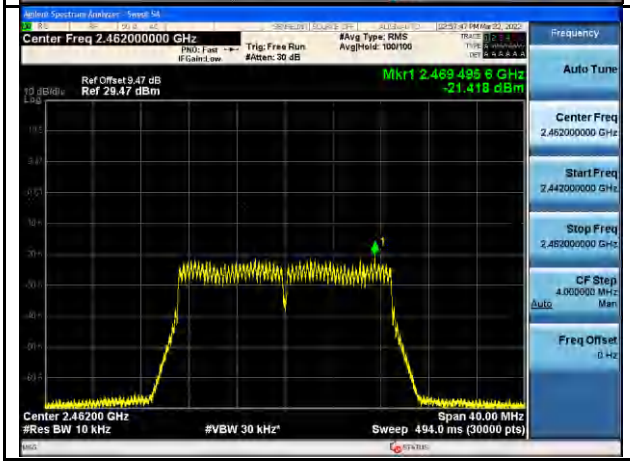
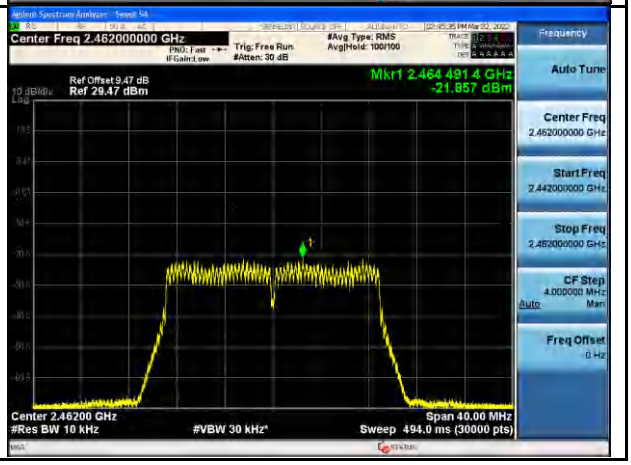
Wi-Fi 802.11 b mode, 1 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 g mode, 6 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT20) mode, MCS0

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT40) mode, MCS0

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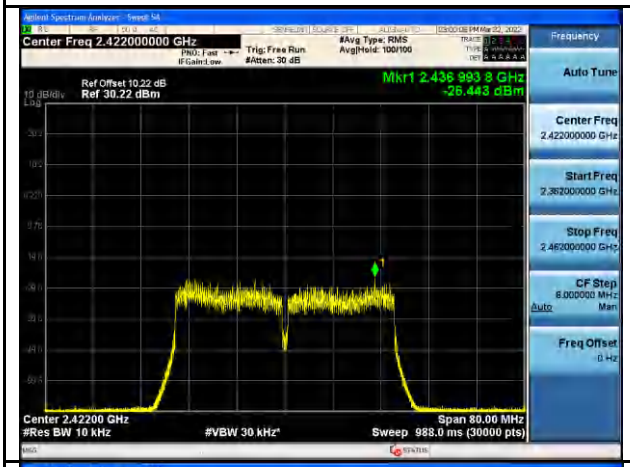
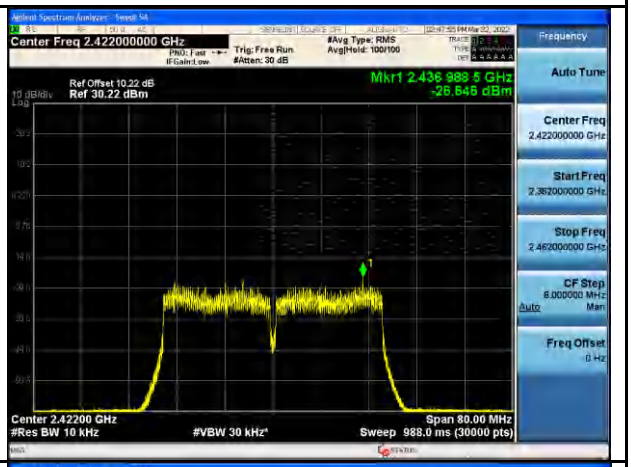
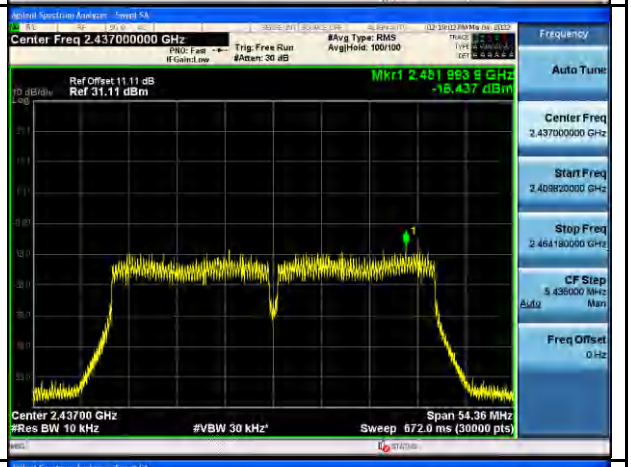
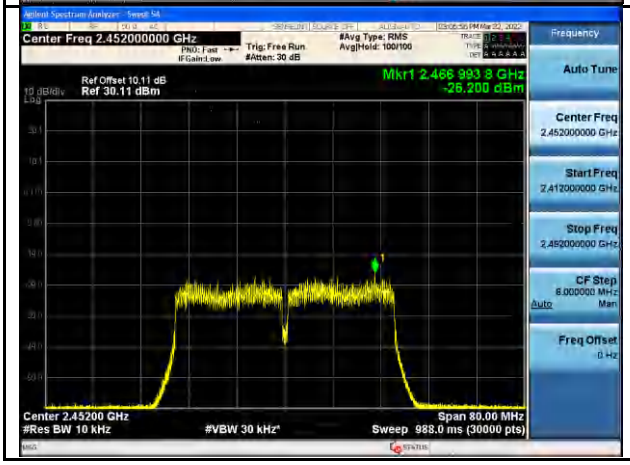
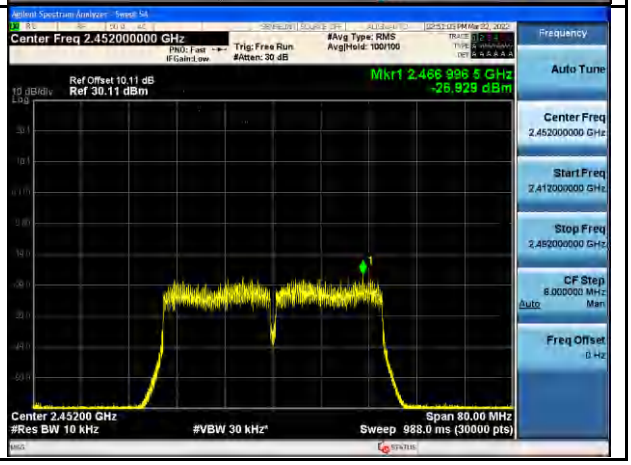
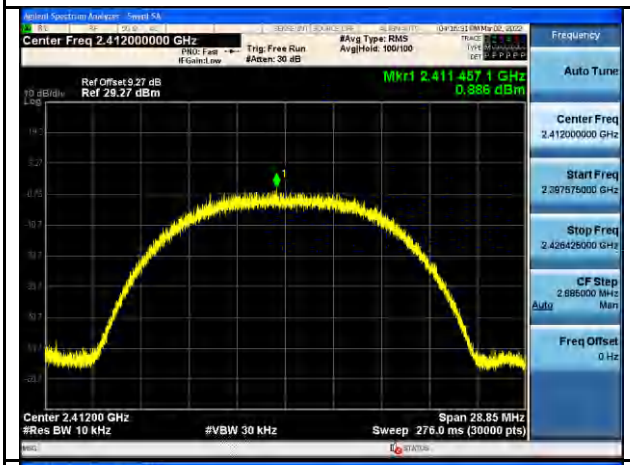
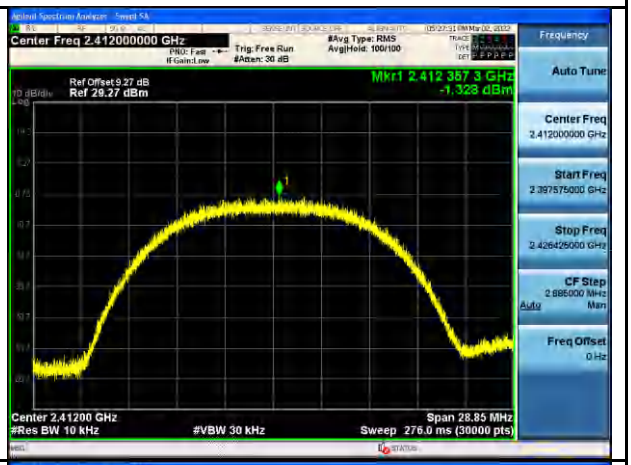
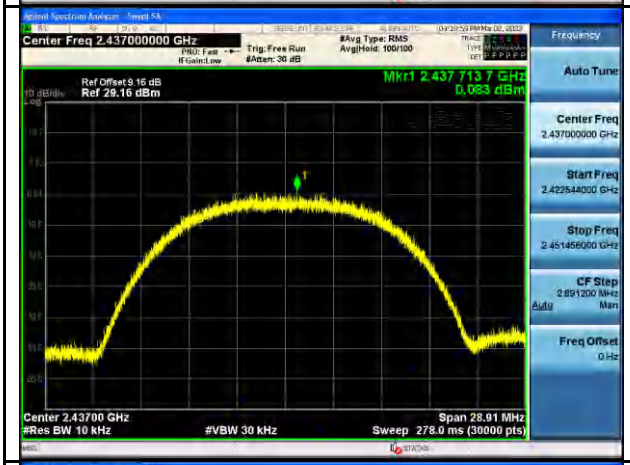
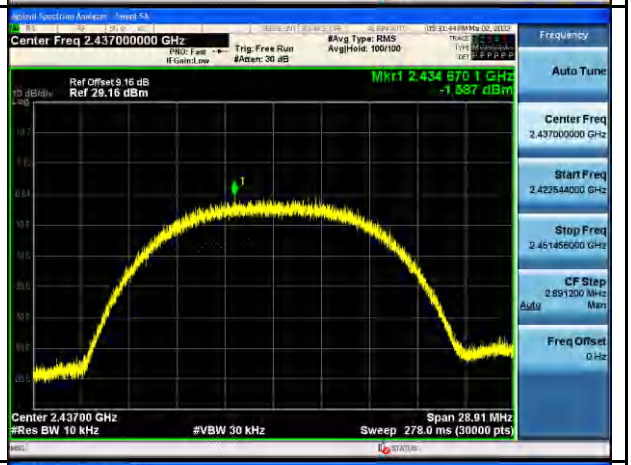
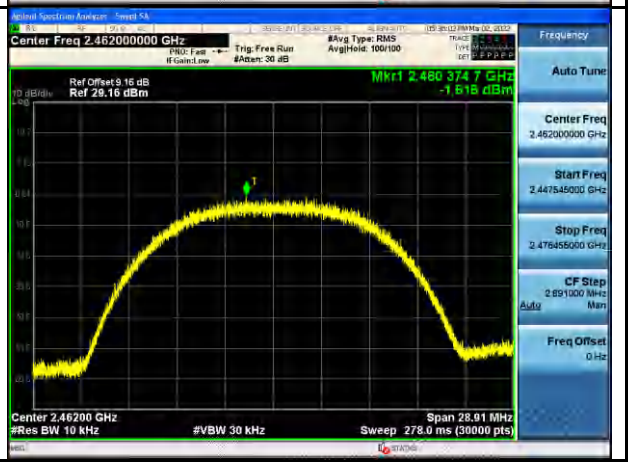
	
	
	

Wi-Fi Module 2: (model: 8812 CU)

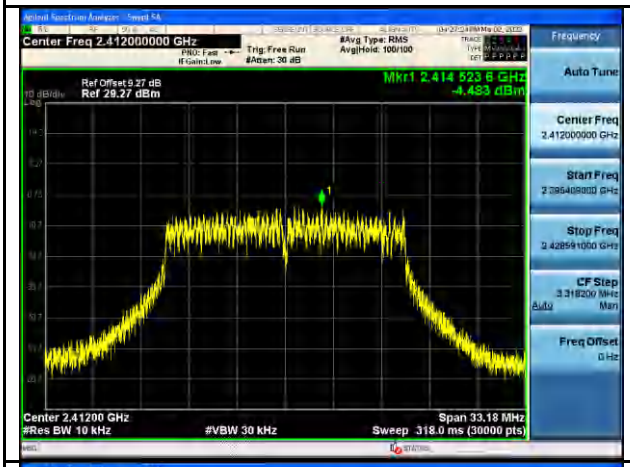
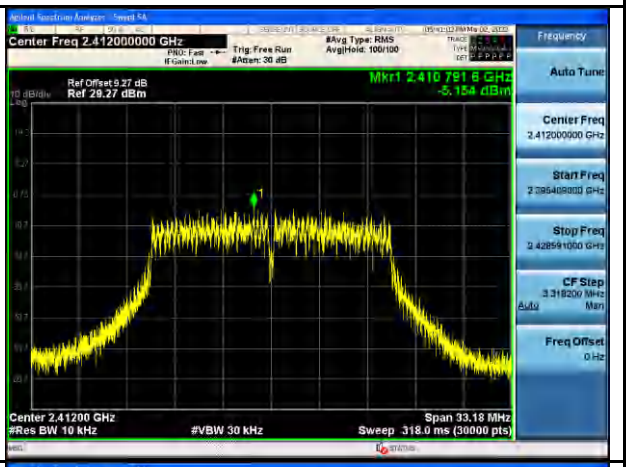
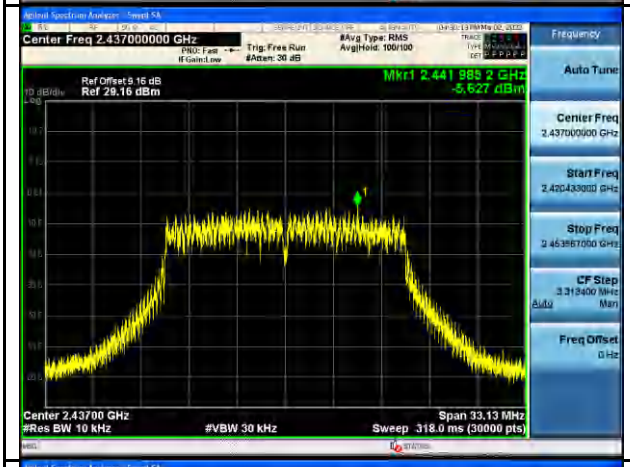
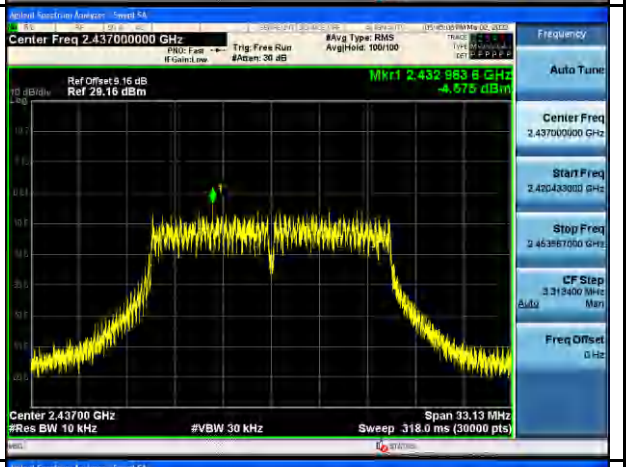
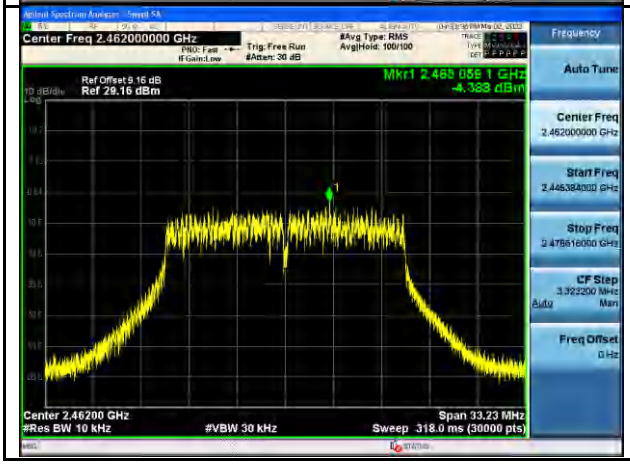
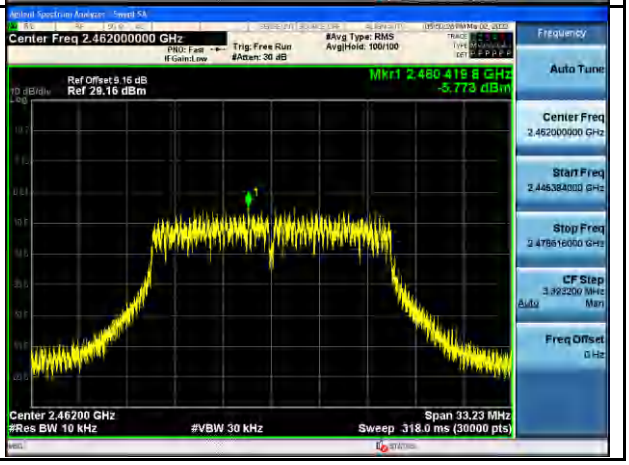
Test Mode	Data Rate	Test Channel (MHz)	Measured Conducted Power Spectral Density(dBm)		Limit (dBm/3kHz)
			ANT1	ANT2	
802.11b	1 Mbps	2412	0.886	-1.328	< 8.0
		2437	0.083	-1.587	
		2462	0.318	-1.616	
802.11g	6 Mbps	2412	-4.483	-5.154	
		2437	-5.627	-4.575	
		2462	-4.388	-5.773	
Maximum Measured Value			0.886	-1.328	

Test Mode	Data Rate	Test Channel (MHz)	Measured Conducted Power Spectral Density(dBm)			Limit (dBm/3kHz)
			ANT1	ANT2	ANT1+ANT2	
802.11n (HT20)	MCS0	2412	-5.104	-6.163	-2.591	< 8.0
		2437	-6.863	-6.834	-3.838	
		2462	-6.441	-5.614	-2.998	
802.11n (HT40)	MCS0	2422	-8.840	-9.012	-5.915	
		2437	-9.364	-10.176	-6.741	
		2452	-8.983	-8.986	-5.974	
Maximum Measured Value			-5.104	-5.614	-2.591	

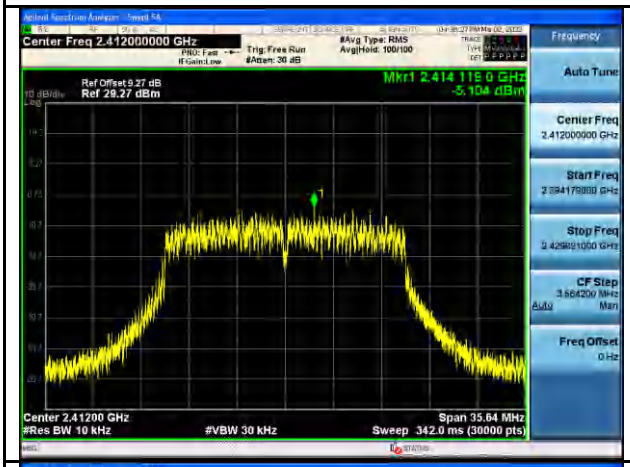
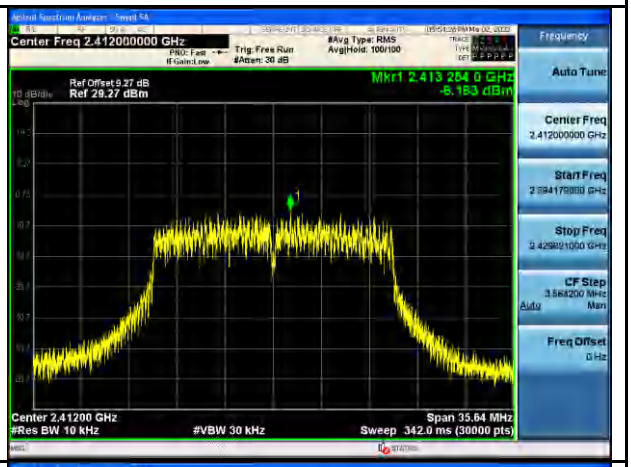
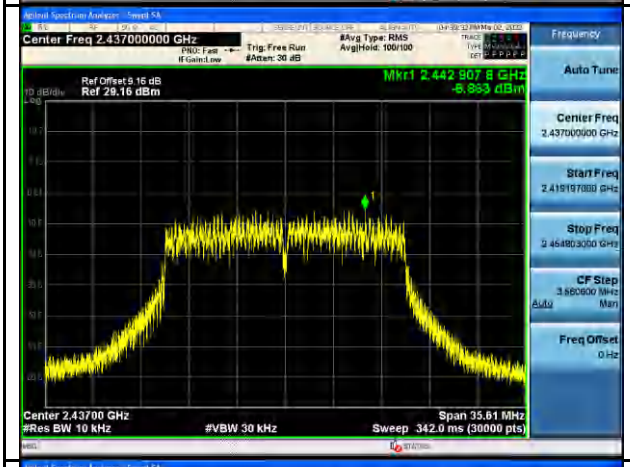
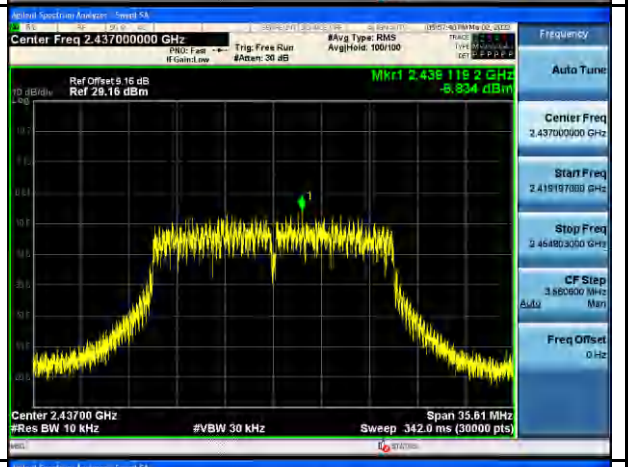
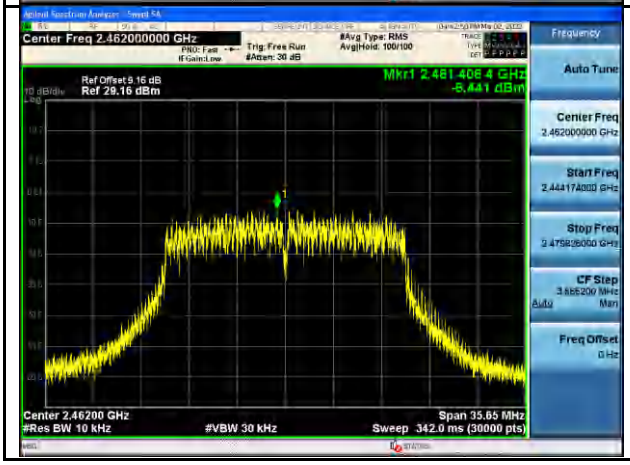
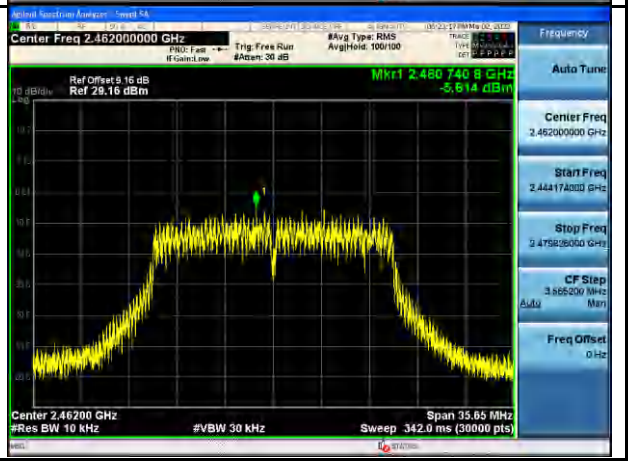
Wi-Fi 802.11 b mode, 1 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 g mode, 6 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT20) mode, MCS0

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT40) mode, MCS0

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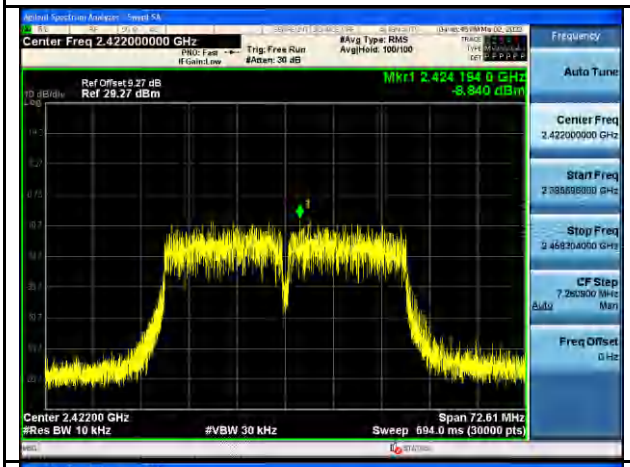
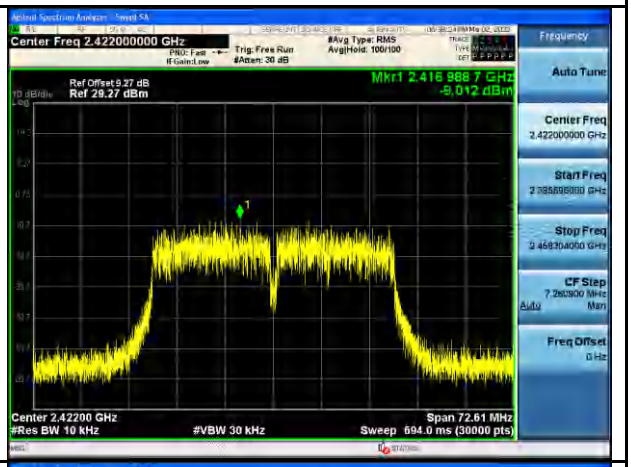
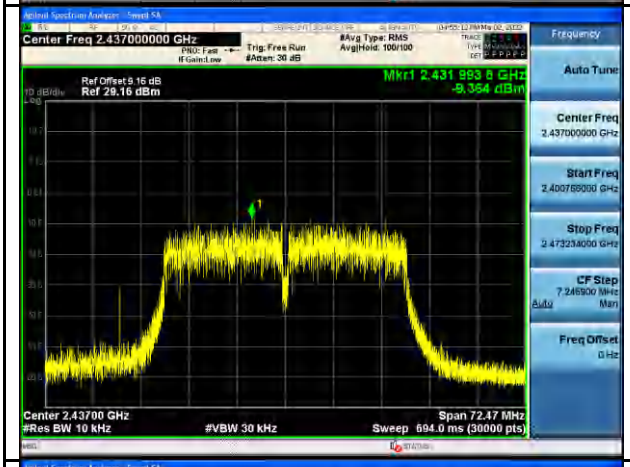
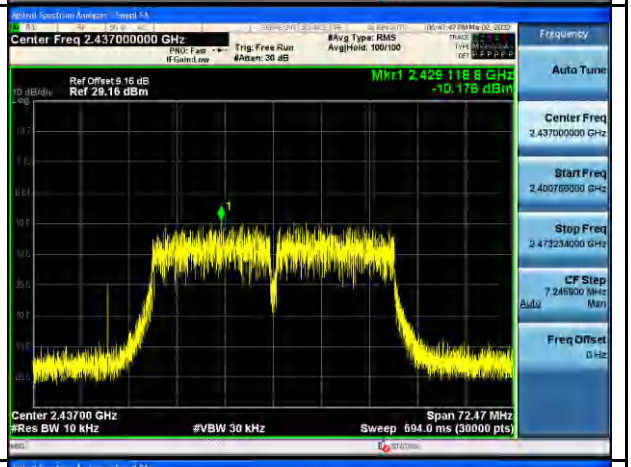
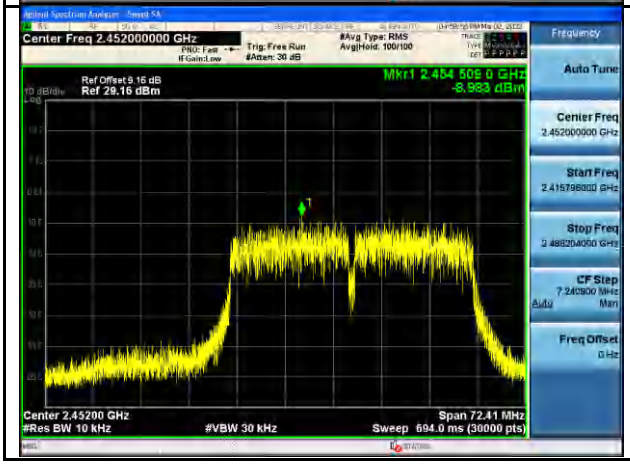
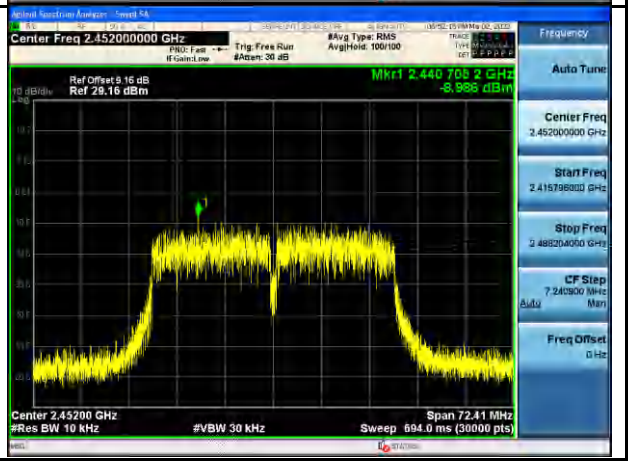
	
	
	

Appendix B.2: Test Results of 6dB Bandwidth

Wi-Fi Module 1 (model: nxp8997):

Test Mode	Data Rate	Test Channel (MHz)	6dB Bandwidth (MHz)		Limit (kHz)
			ANT1	ANT2	
802.11b	1 Mbps	2412	9.960	10.120	> 500
		2437	10.000	9.840	
		2462	10.040	10.080	
802.11g	6 Mbps	2412	16.560	16.520	
		2437	16.560	16.480	
		2462	16.480	16.560	
802.11n (HT20)	MCS0	2412	17.680	17.760	
		2437	17.760	17.720	
		2462	17.760	17.760	
802.11n (HT40)	MCS0	2422	36.400	36.240	
		2437	36.480	36.240	
		2452	36.160	36.160	

Wi-Fi 802.11 b mode, 1 Mbps

ANT 1	ANT 2
	
	
	

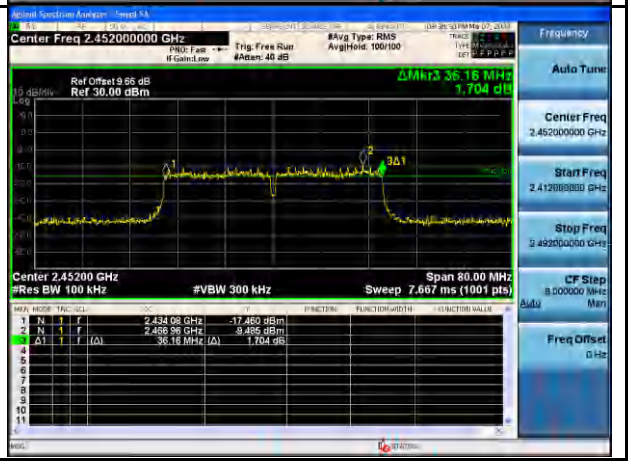
Wi-Fi 802.11 g mode, 6 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT20) mode, MCS0

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT40) mode, MCS0

ANT 1	ANT 2
	
	
	

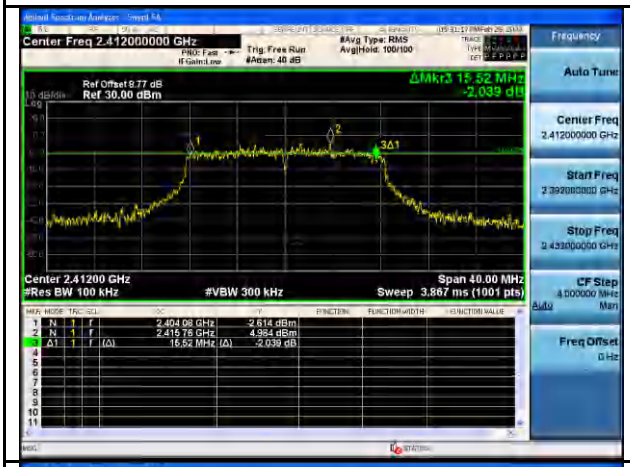
Wi-Fi Module 2: (model: 8812 CU)

Test Mode	Data Rate	Test Channel (MHz)	6dB Bandwidth (MHz)		Limit (kHz)
			ANT1	ANT2	
802.11b	1 Mbps	2412	10.120	10.560	> 500
		2437	11.120	9.720	
		2462	10.280	11.160	
802.11g	6 Mbps	2412	15.520	16.520	
		2437	16.400	16.280	
		2462	16.440	15.400	
802.11n (HT20)	MCS0	2412	17.080	17.240	
		2437	15.580	17.000	
		2462	17.640	17.320	
802.11n (HT40)	MCS0	2422	34.240	34.560	
		2437	35.280	35.600	
		2452	35.200	35.200	

Wi-Fi 802.11 b mode, 1 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 g mode, 6 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT20) mode, MCS0

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT40) mode, MCS0

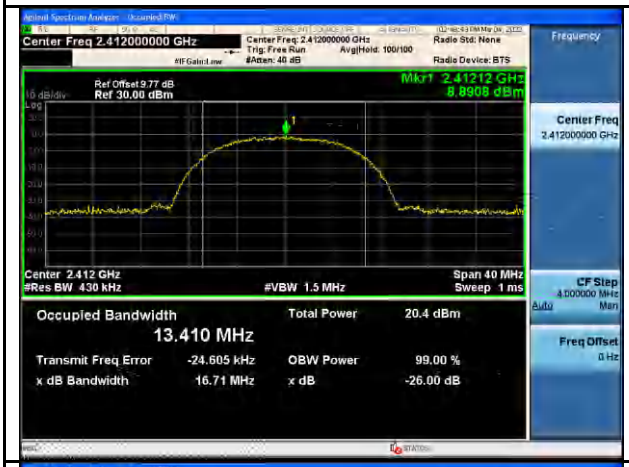
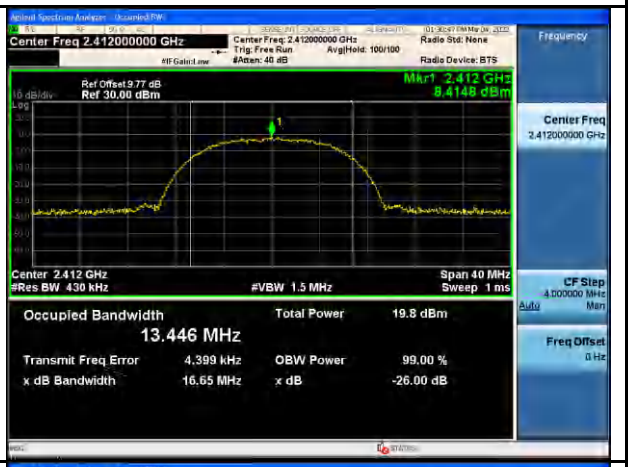
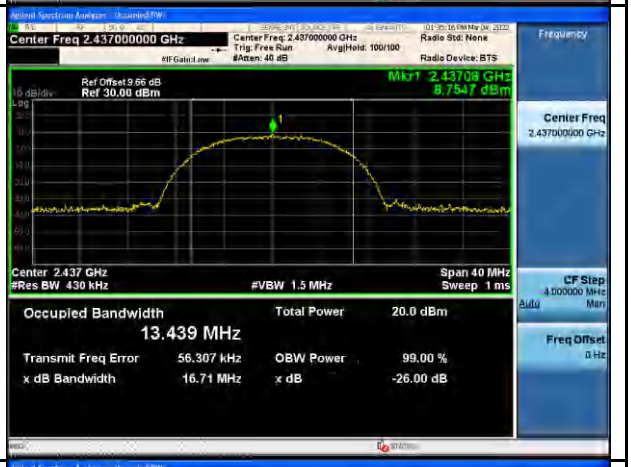
ANT 1	ANT 2
	
	
	

Appendix B.3: Test Results of 99% Bandwidth

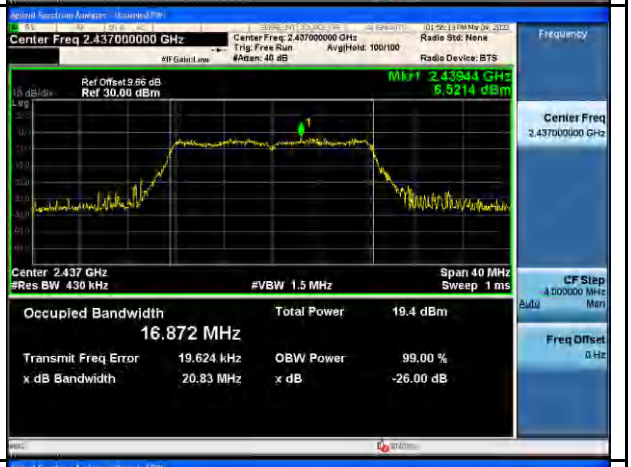
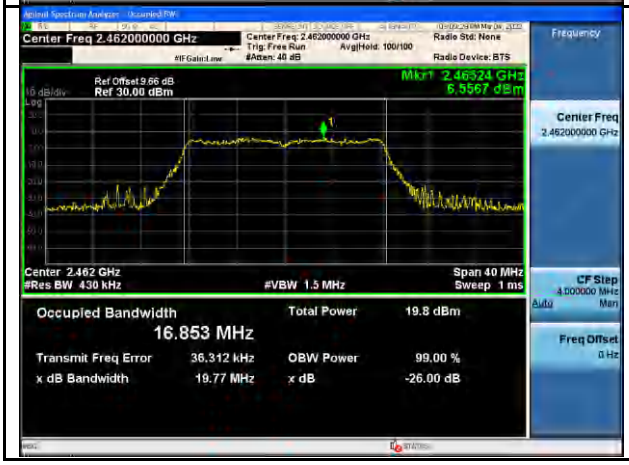
Wi-Fi Module 1 (model: nxp8997):

Test Mode	Data Rate	Test Channel (MHz)	99% Bandwidth (MHz)		Limit (MHz)
			ANT1	ANT2	
802.11b	1 Mbps	2412	13.410	13.446	N/A
		2437	13.432	13.439	
		2462	13.443	13.412	
802.11g	6 Mbps	2412	16.905	16.893	
		2437	16.899	16.872	
		2462	16.853	16.862	
802.11n (HT20)	MCS0	2412	17.854	17.856	
		2437	17.854	17.860	
		2462	17.840	17.859	
802.11n (HT40)	MCS0	2422	36.511	36.512	
		2437	36.497	36.440	
		2452	36.505	36.543	

Wi-Fi 802.11 b mode, 1 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 g mode, 6 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT20) mode, MCS0

ANT 1	ANT 2
	
	
	

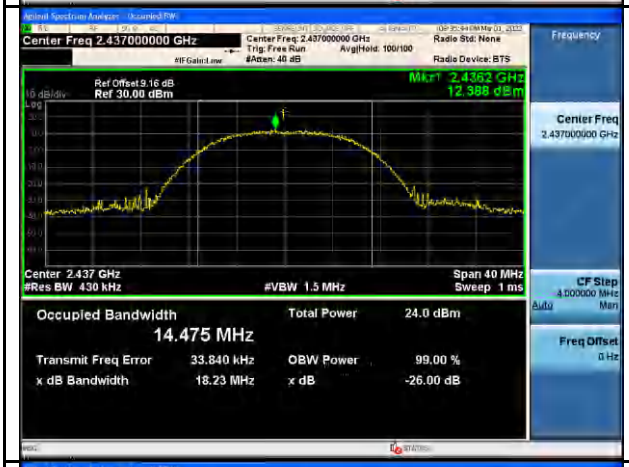
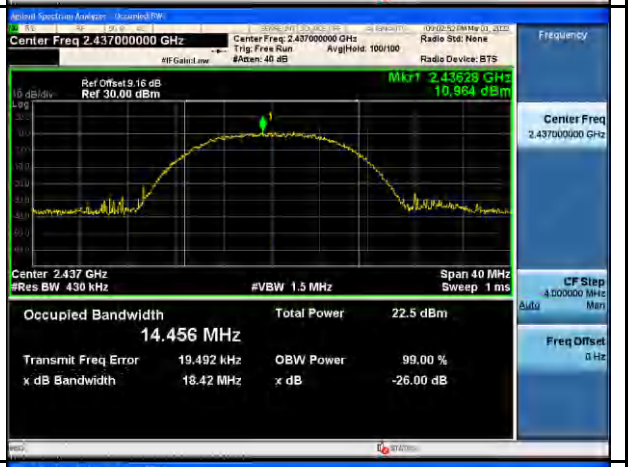
Wi-Fi 802.11 n(HT40) mode, MCS0

ANT 1	ANT 2
	
	
	

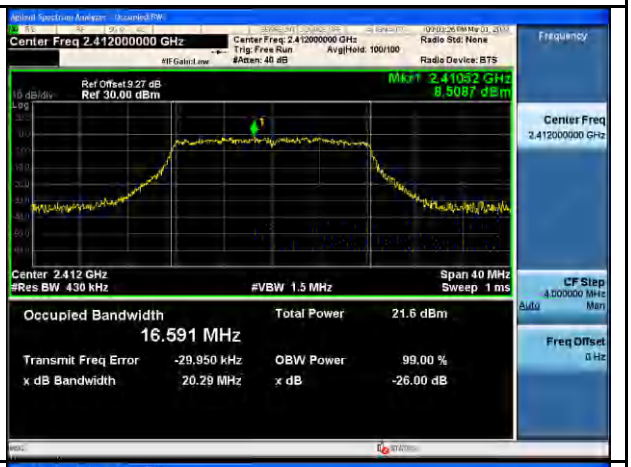
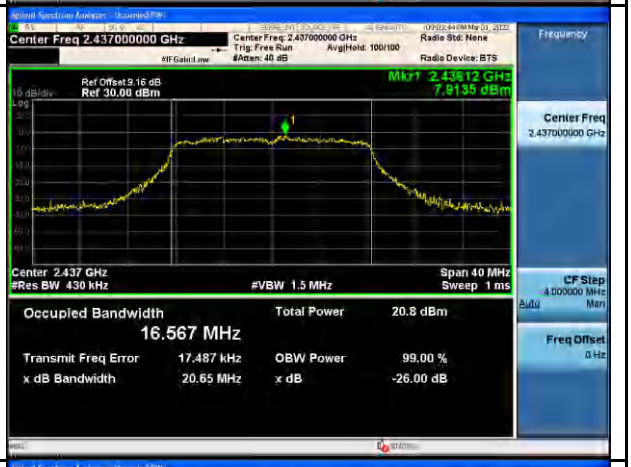
Wi-Fi Module 2: (model: 8812 CU)

Test Mode	Data Rate	Test Channel (MHz)	99% Bandwidth (MHz)		Limit (kHz)
			ANT1	ANT2	
802.11b	1 Mbps	2412	15.111	14.425	N/A
		2437	14.475	14.456	
		2462	14.515	14.455	
802.11g	6 Mbps	2412	16.615	16.591	
		2437	16.559	16.567	
		2462	16.613	16.616	
802.11n (HT20)	MCS0	2412	17.876	17.821	
		2437	17.784	17.803	
		2462	17.789	17.826	
802.11n (HT40)	MCS0	2422	36.287	36.304	
		2437	36.274	36.234	
		2452	36.116	36.204	

Wi-Fi 802.11 b mode, 1 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 g mode, 6 Mbps

ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 n(HT20) mode, MCS0

ANT 1	ANT 2
	
	
	

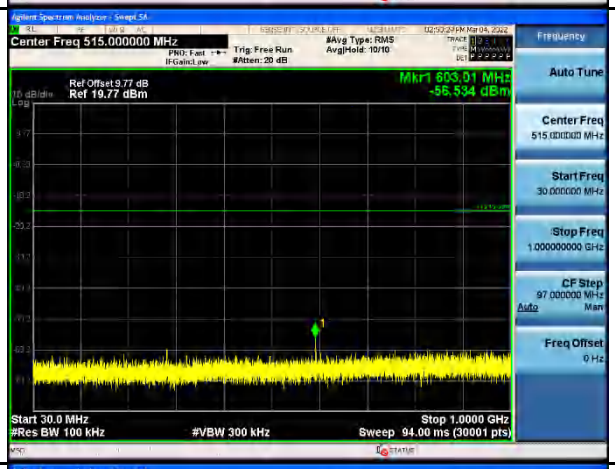
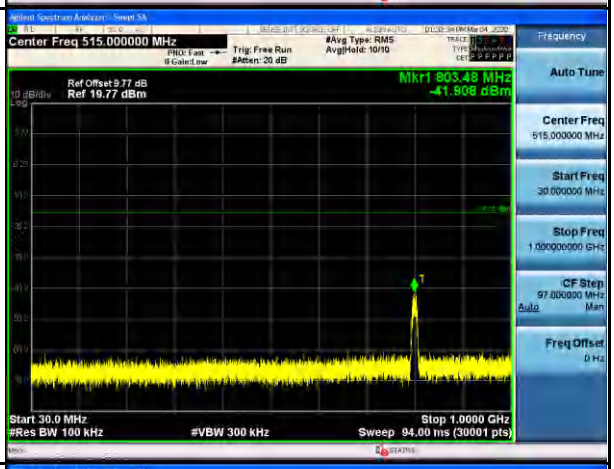
Wi-Fi 802.11 n(HT40) mode, MCS0

ANT 1	ANT 2
	
	
	

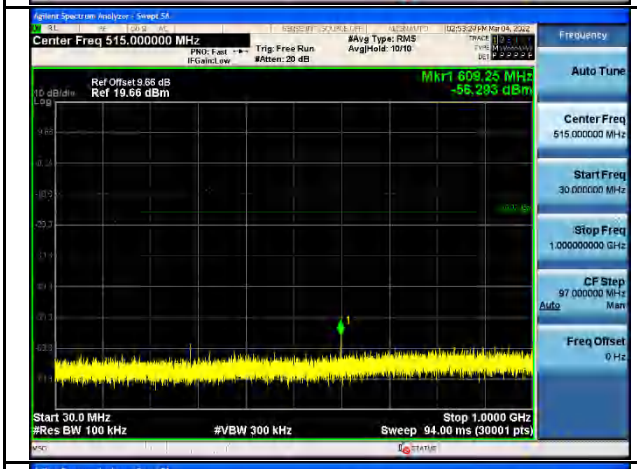
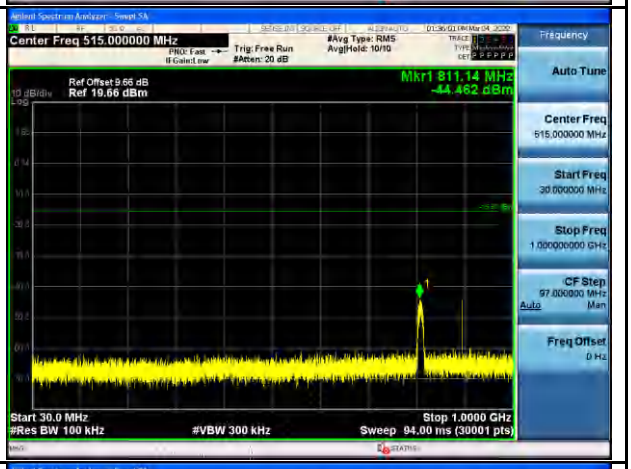
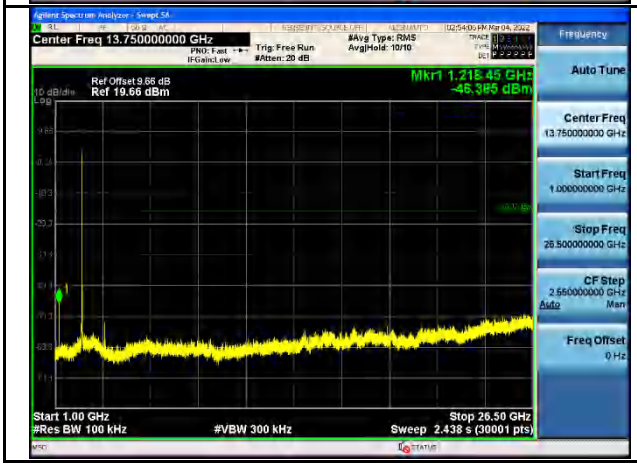
Appendix B.4: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

Wi-Fi Module 1 (model: nxp8997):

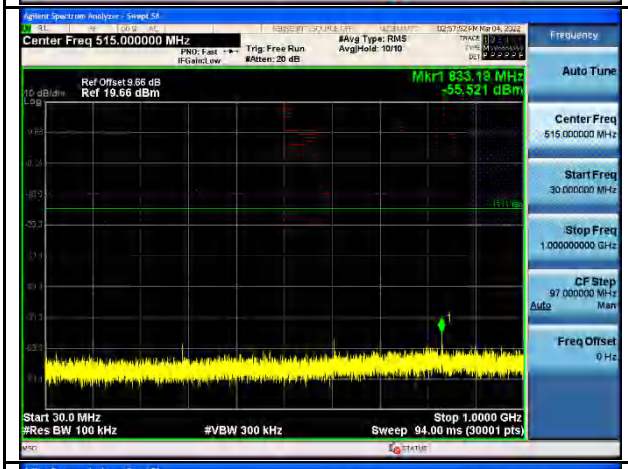
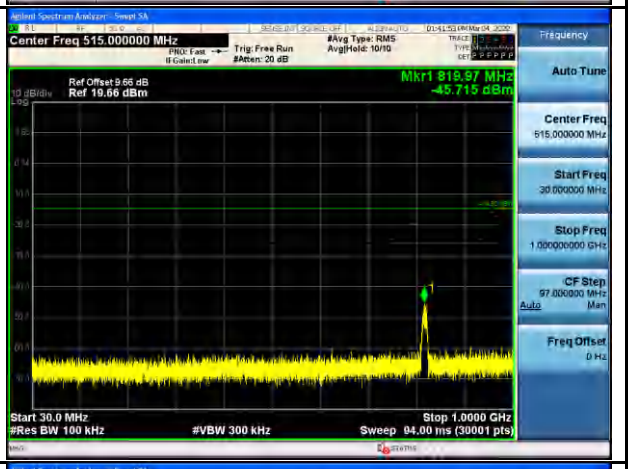
Wi-Fi 802.11 b mode, 1 Mbps
Low Channel:

ANT 1	ANT 2
	
	
	

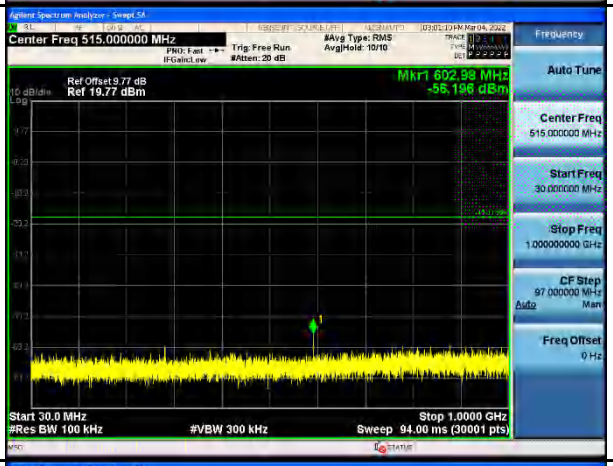
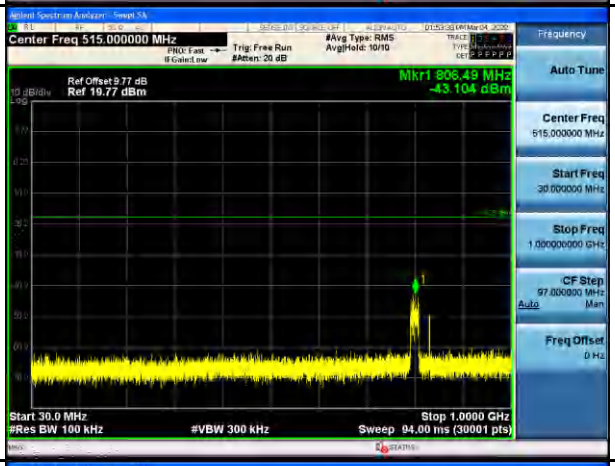
Middle Channel:

ANT 1	ANT 2
	
	
	

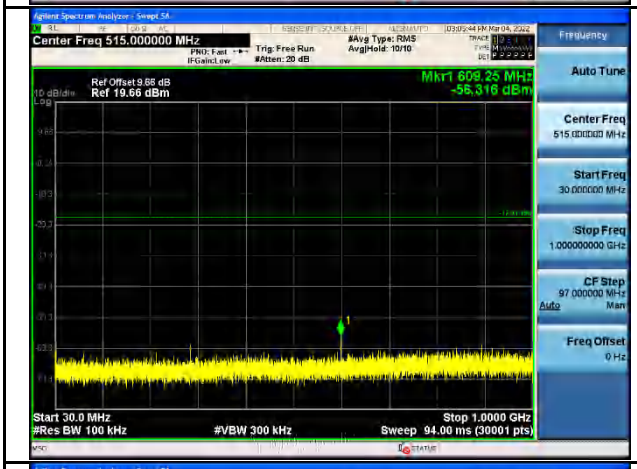
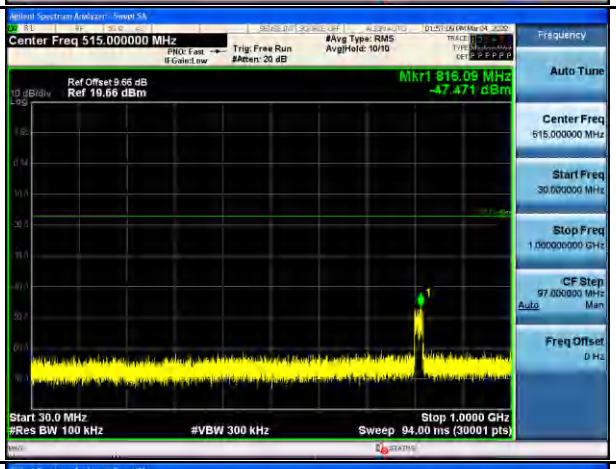
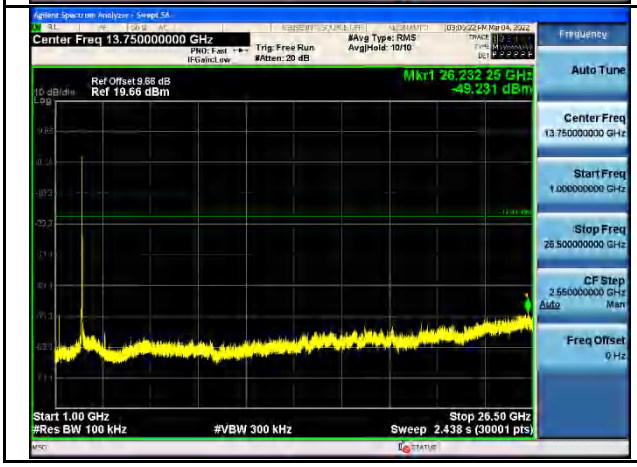
High Channel:

ANT 1	ANT 2
	
	
	

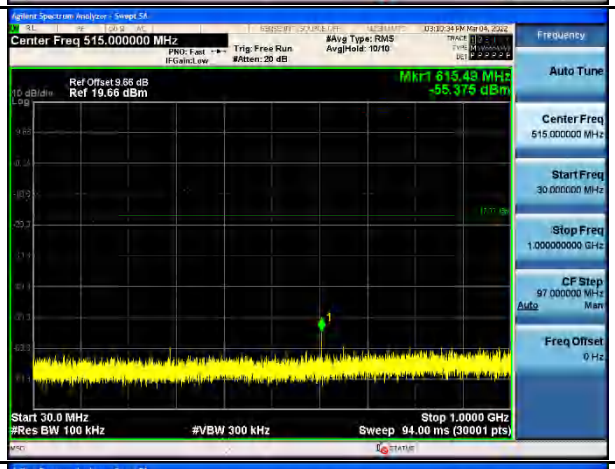
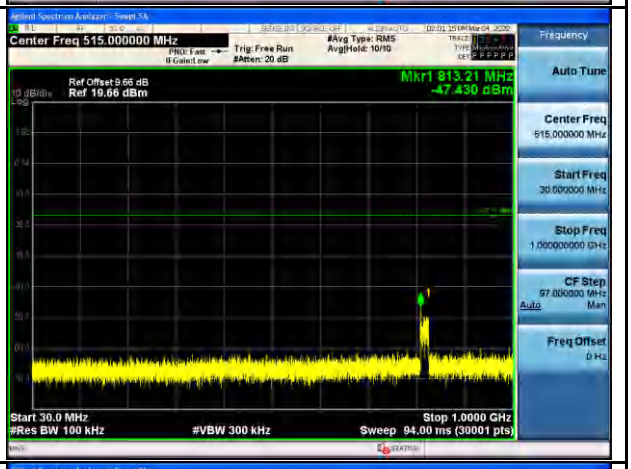
Wi-Fi 802.11 g mode, 6 Mbps
Low Channel:

ANT 1	ANT 2
	
	
	

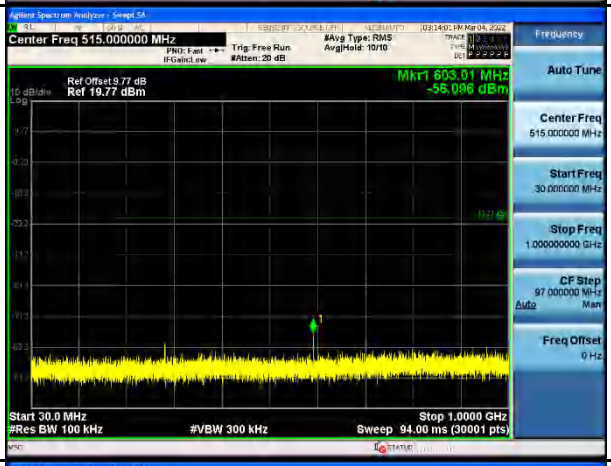
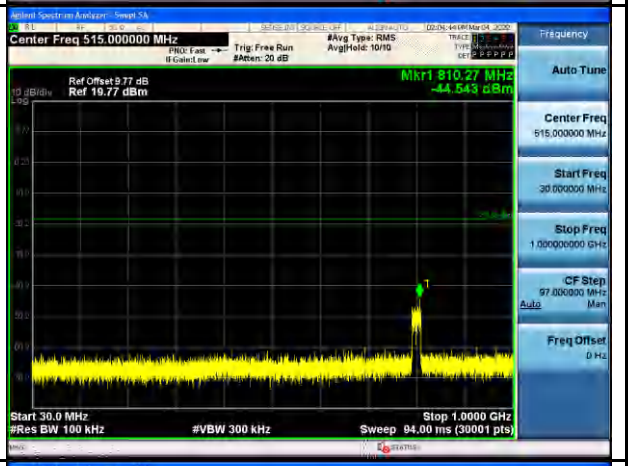
Middle Channel:

ANT 1	ANT 2
	
	
	

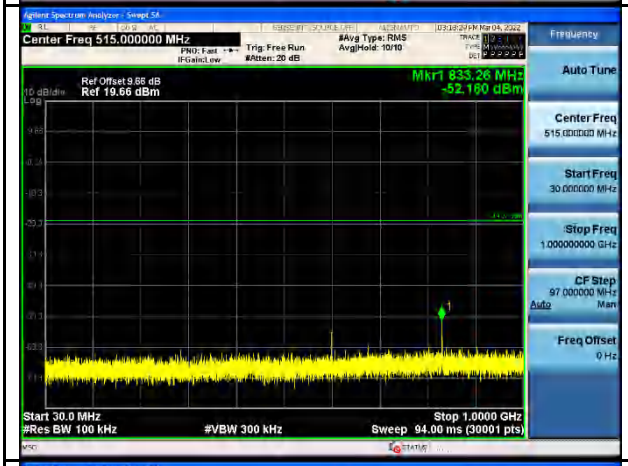
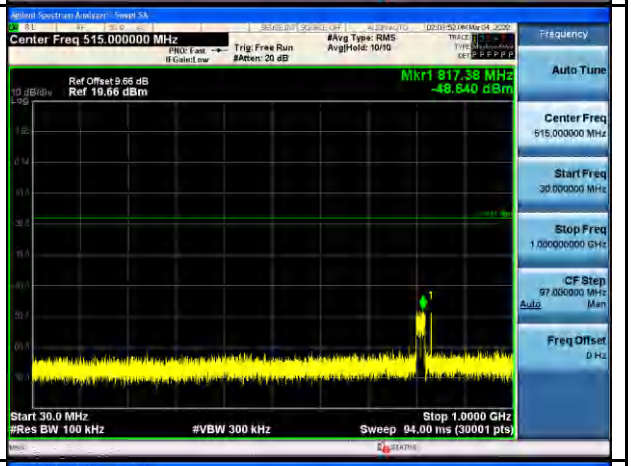
High Channel:

ANT 1	ANT 2
	
	
	

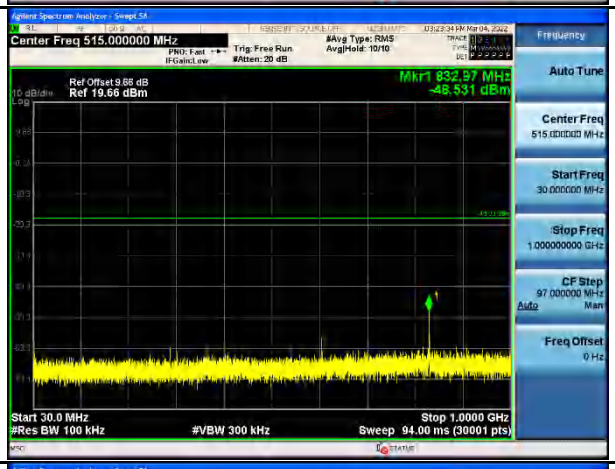
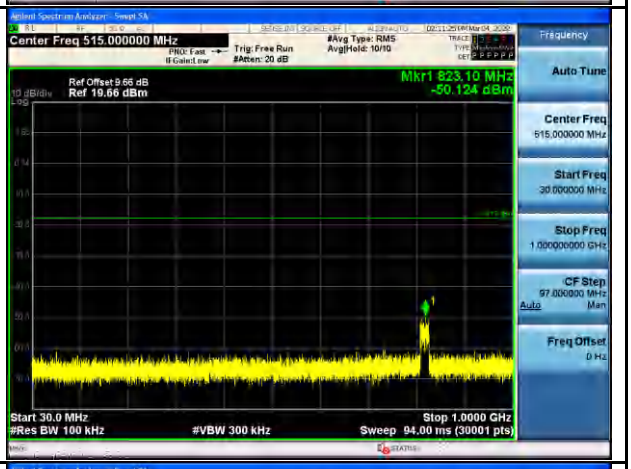
Wi-Fi 802.11 n(HT20) mode, MCS0
Low Channel:

ANT 1	ANT 2
	
	
	

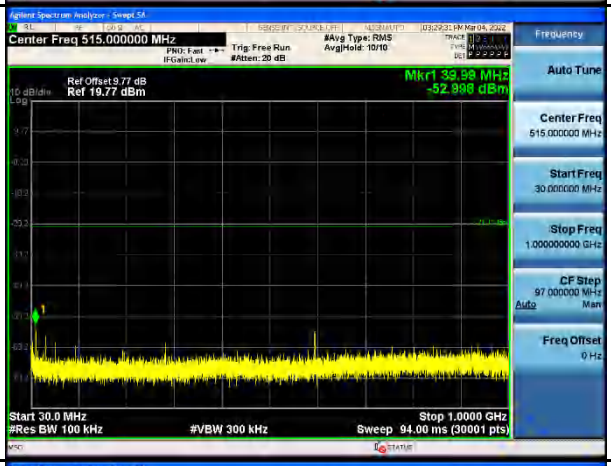
Middle Channel:

ANT 1	ANT 2
	
	
	

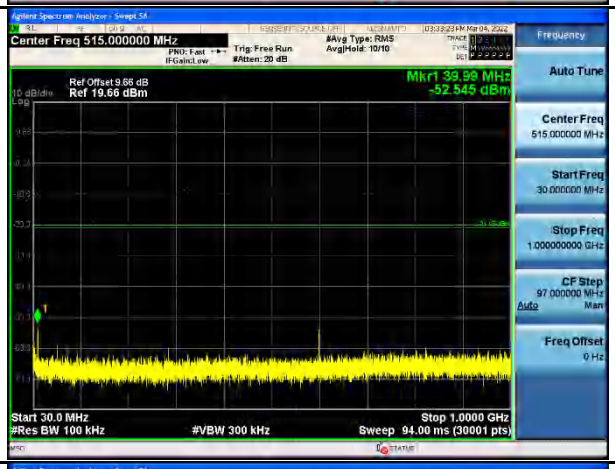
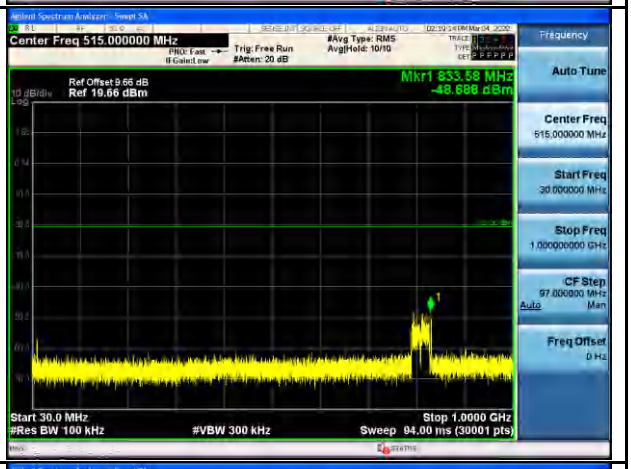
High Channel:

ANT 1	ANT 2
	
	
	

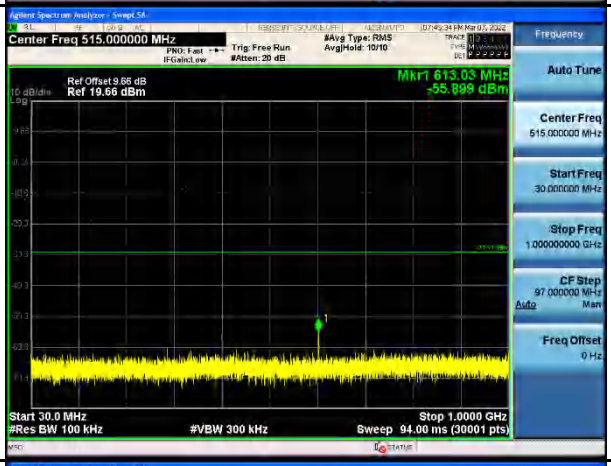
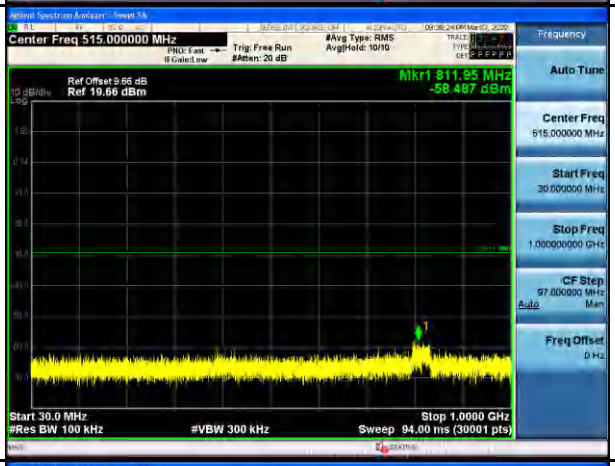
Wi-Fi 802.11 n(HT40) mode, MCS0
Low Channel:

ANT 1	ANT 2
	
	
	

Middle Channel:

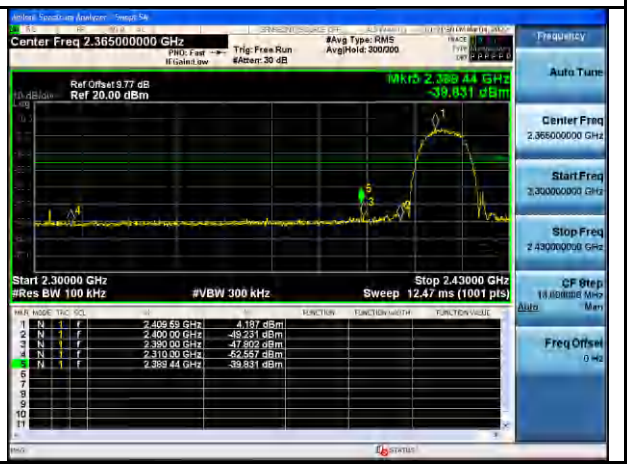
ANT 1	ANT 2
	
	
	

High Channel:

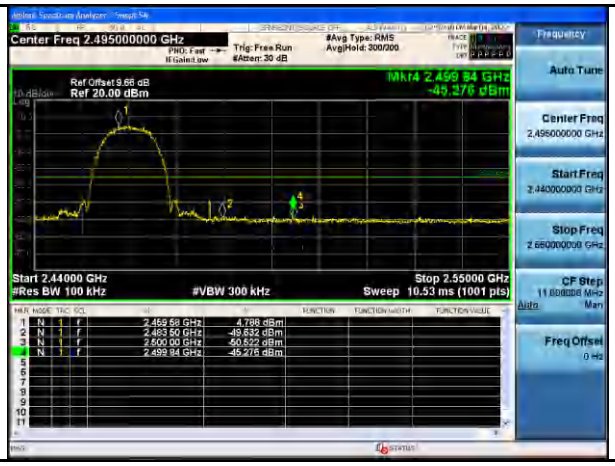
ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 b mode, Band Edge

Low Channel:

ANT 1	ANT 2
	

High Channel:

ANT 1	ANT 2
	

Wi-Fi 802.11 g mode, Band Edge

Low Channel:

ANT 1	ANT 2
	

High Channel:

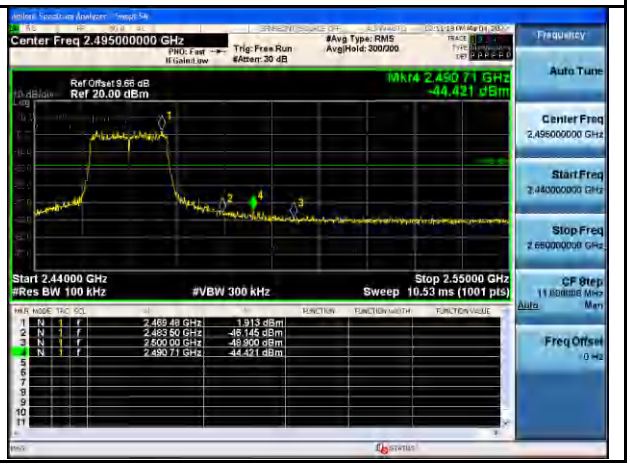
ANT 1	ANT 2
	

Wi-Fi 802.11 n(HT20) mode, Band Edge

Low Channel:

ANT 1	ANT 2
	

High Channel:

ANT 1	ANT 2
	

Wi-Fi 802.11 n(HT40) mode, Band Edge

Low Channel:

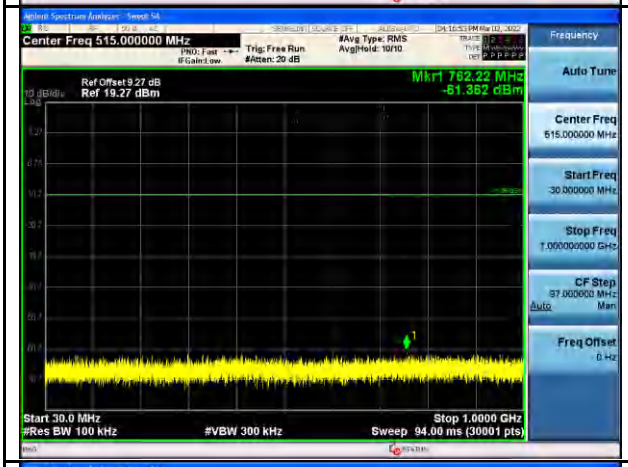
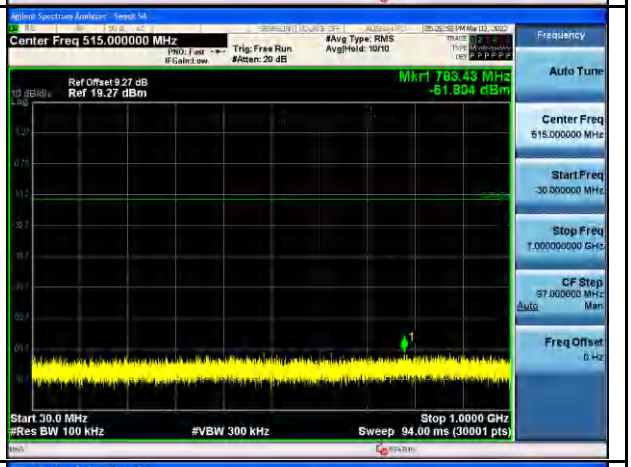
ANT 1	ANT 2
	

High Channel:

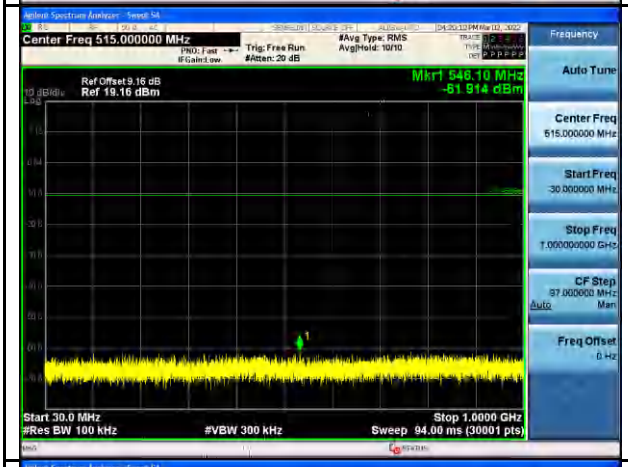
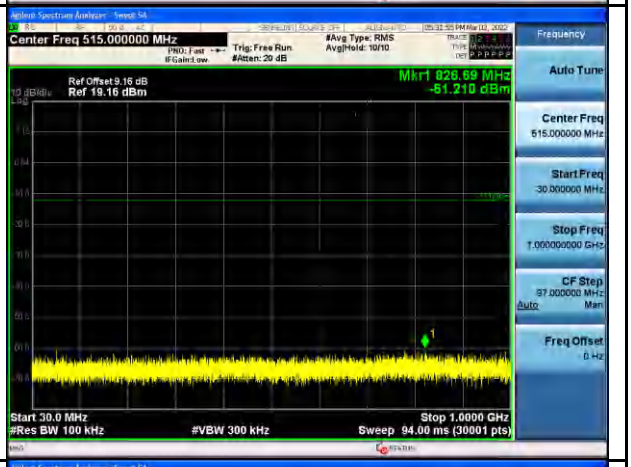
ANT 1	ANT 2
	

Wi-Fi Module 2: (model: 8812 CU)

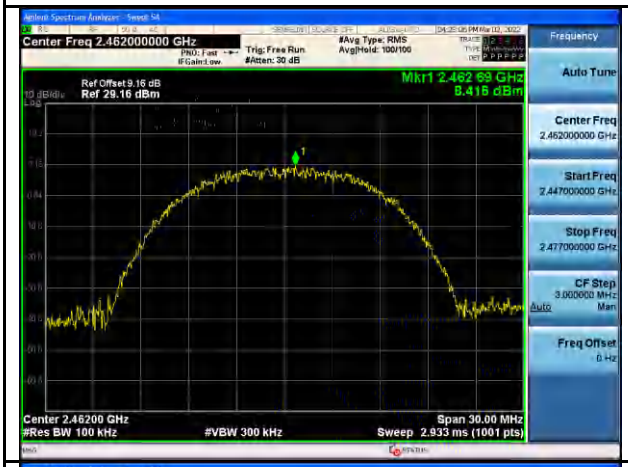
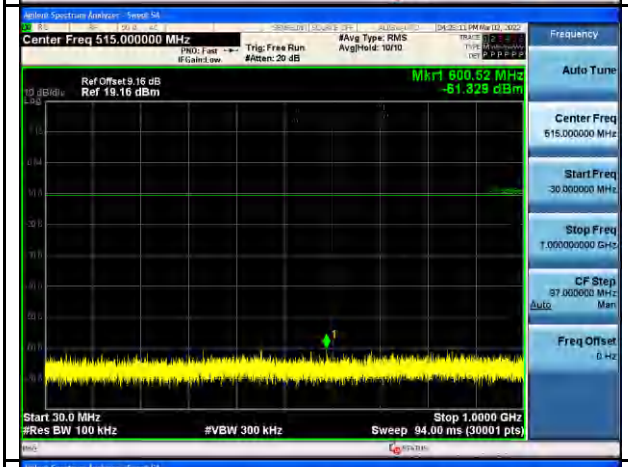
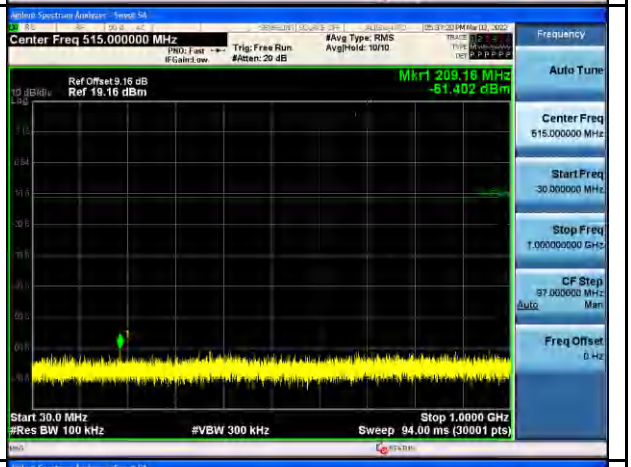
Wi-Fi 802.11 b mode, 1 Mbps
Low Channel:

ANT 1	ANT 2
	
	
	

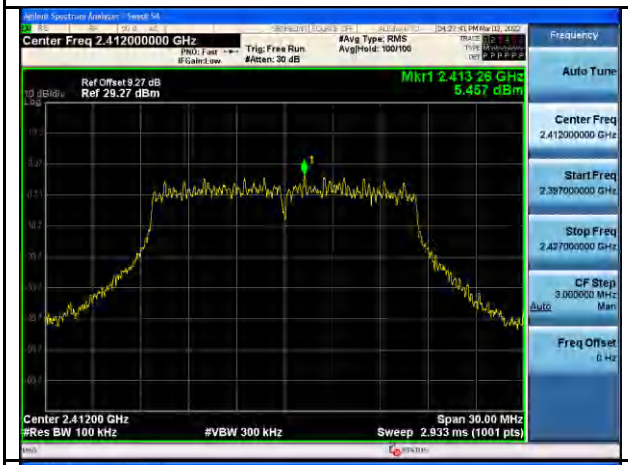
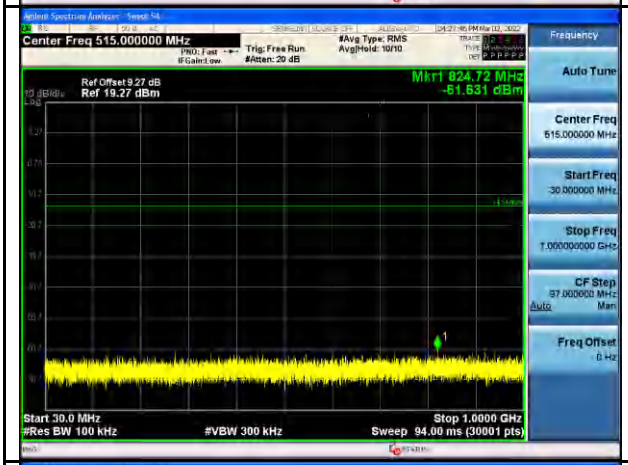
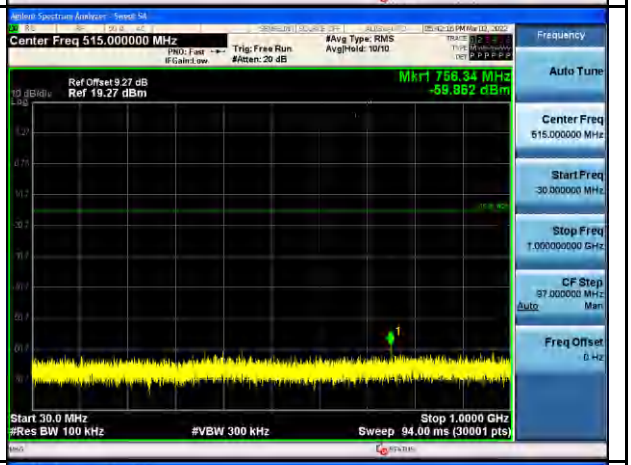
Middle Channel:

ANT 1	ANT 2
	
	
	

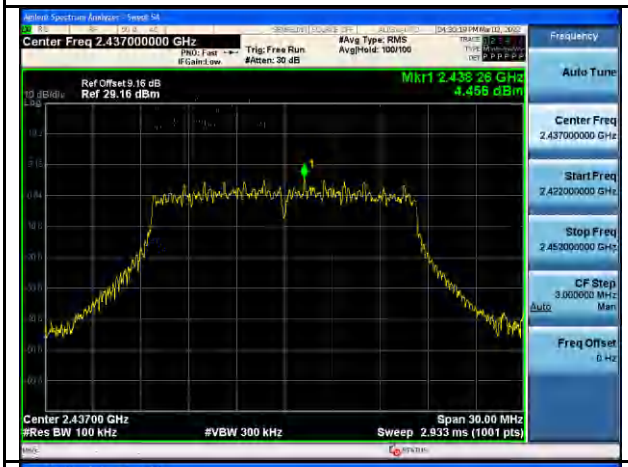
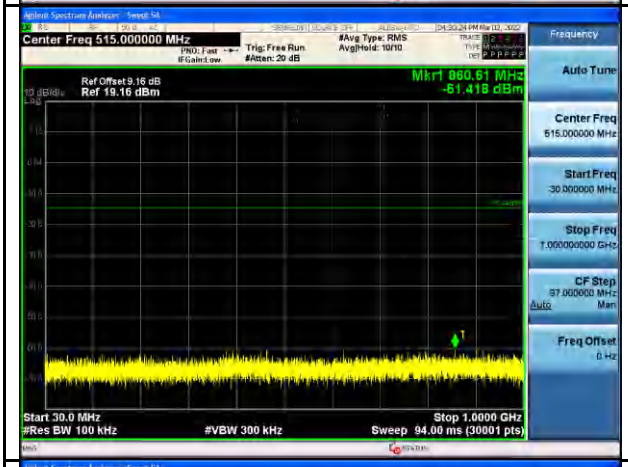
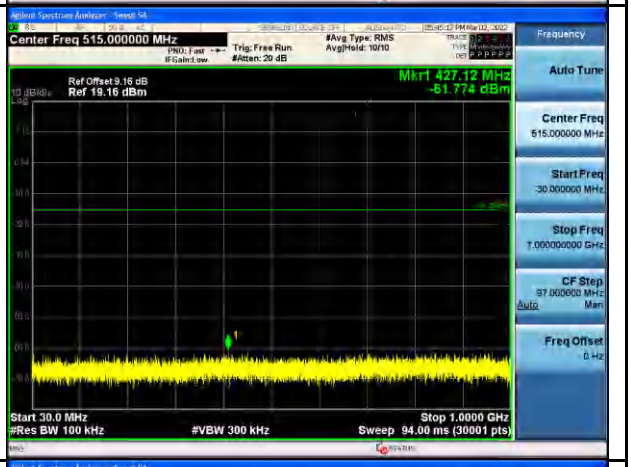
High Channel:

ANT 1	ANT 2
	
	
	

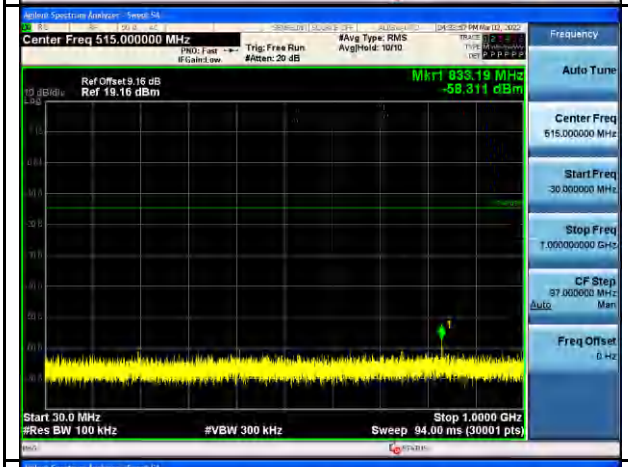
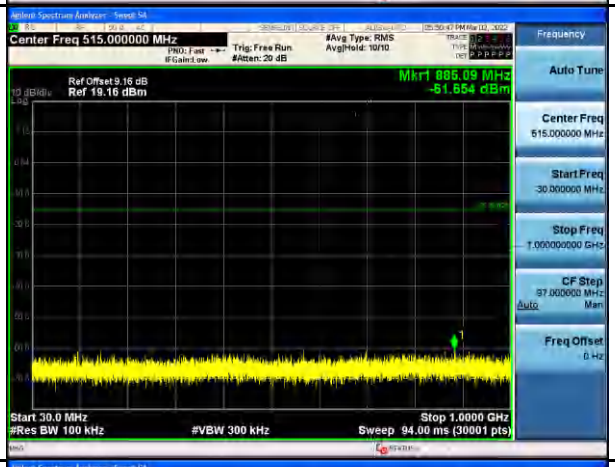
Wi-Fi 802.11 g mode, 6 Mbps
Low Channel:

ANT 1	ANT 2
	
	
	

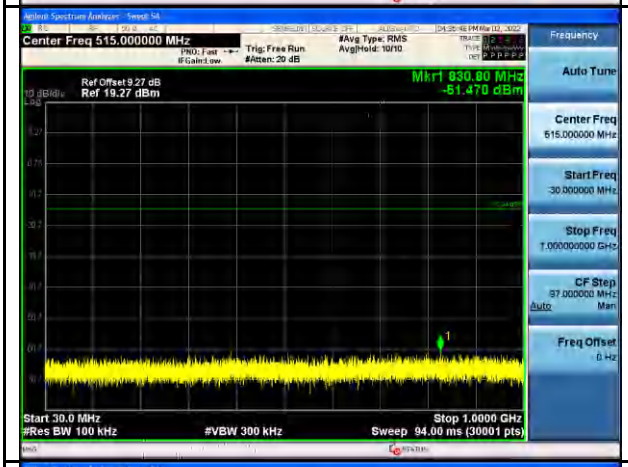
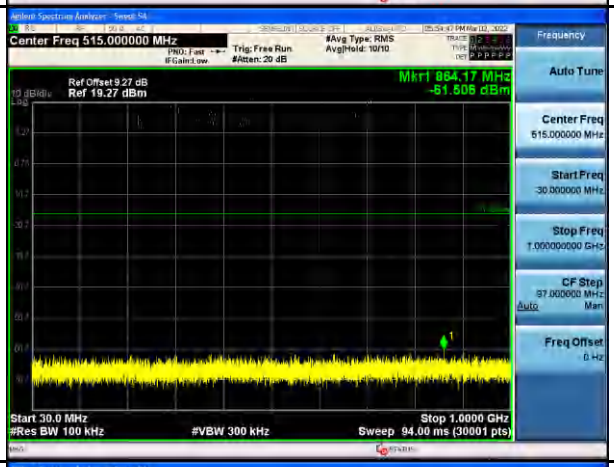
Middle Channel:

ANT 1	ANT 2
	
	
	

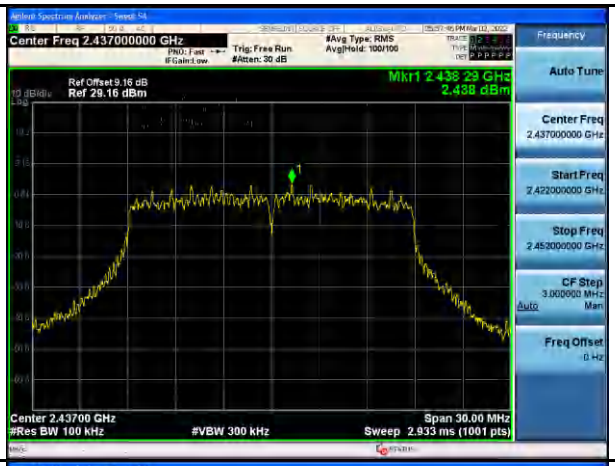
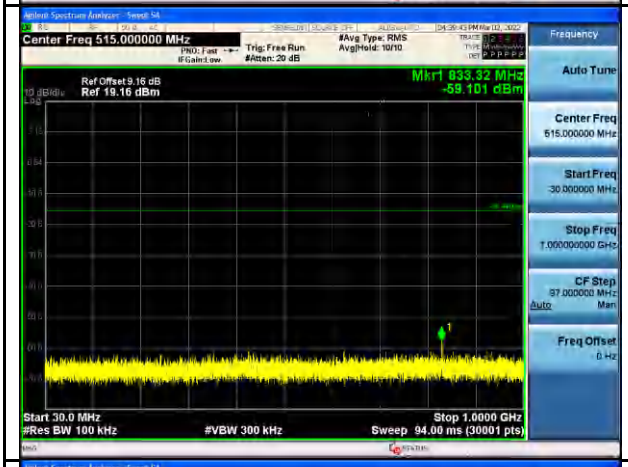
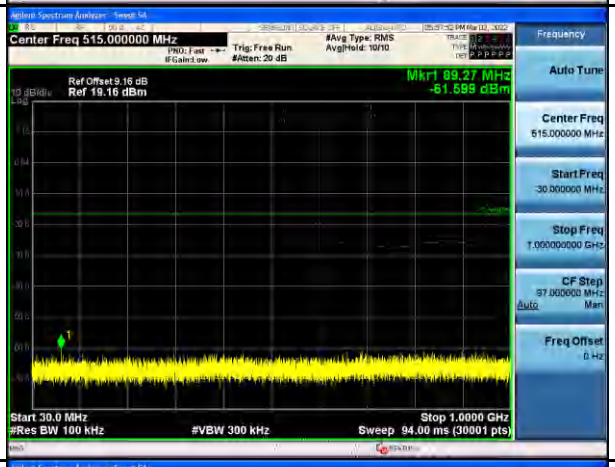
High Channel:

ANT 1	ANT 2
	
	
	

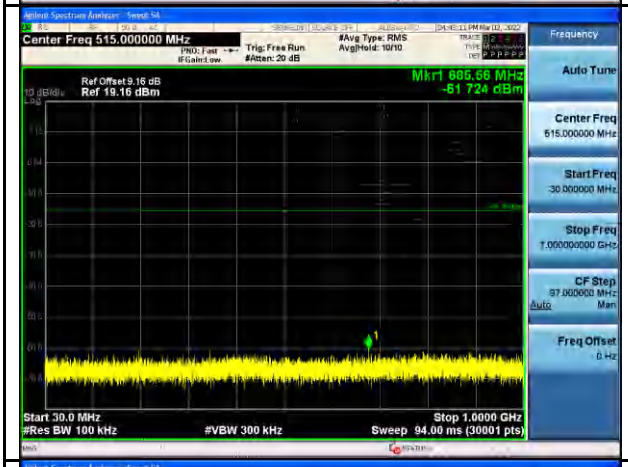
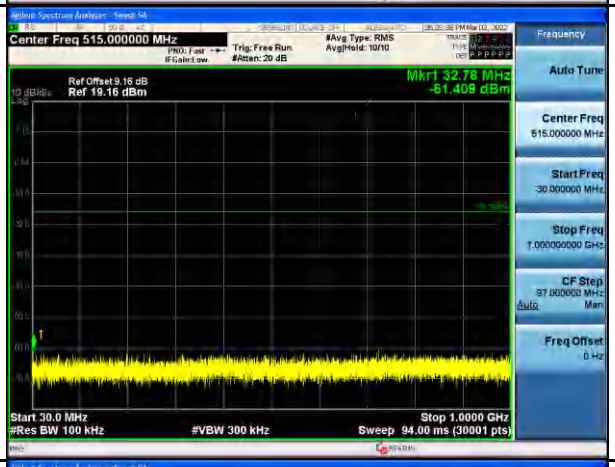
Wi-Fi 802.11 n(HT20) mode, MCS0
Low Channel:

ANT 1	ANT 2
	
	
	

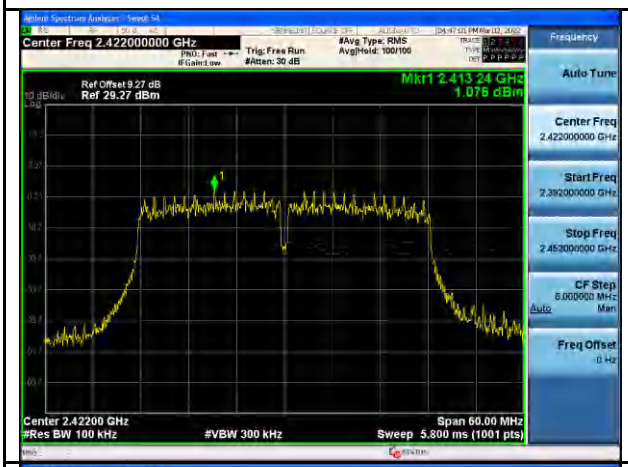
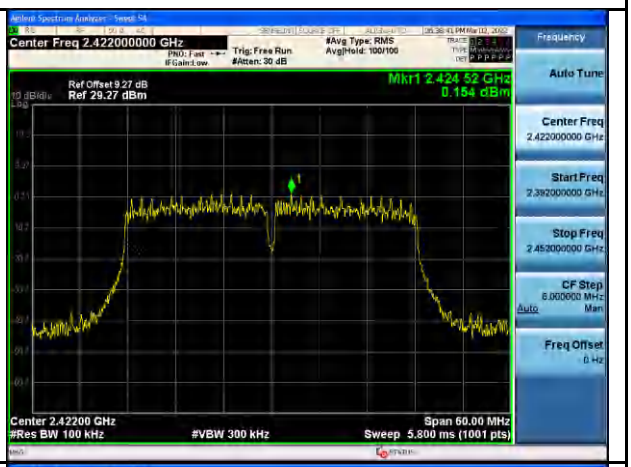
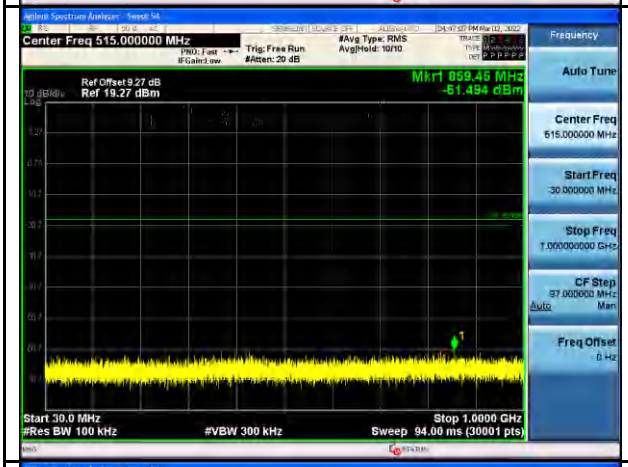
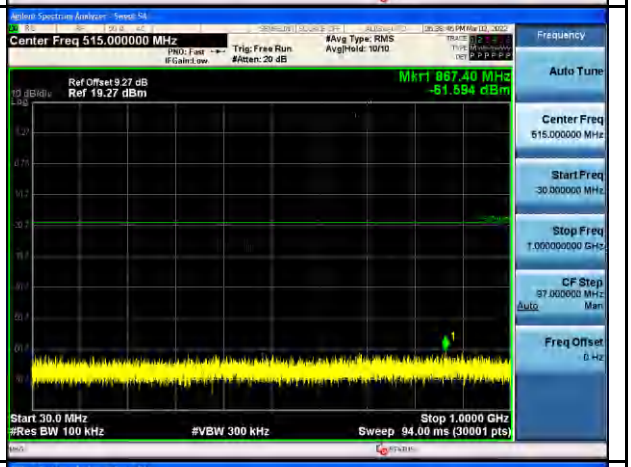
Middle Channel:

ANT 1	ANT 2
	
	
	

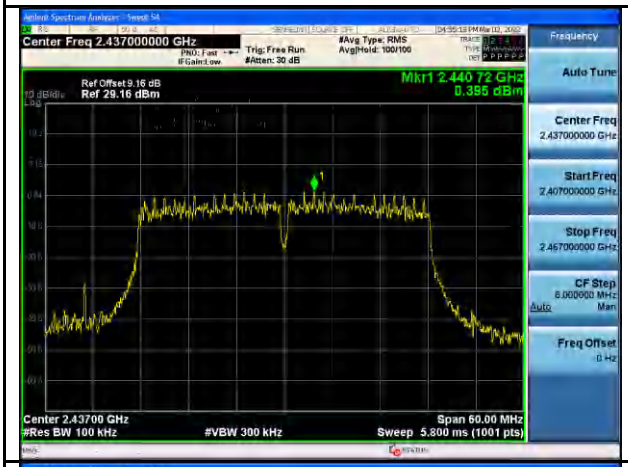
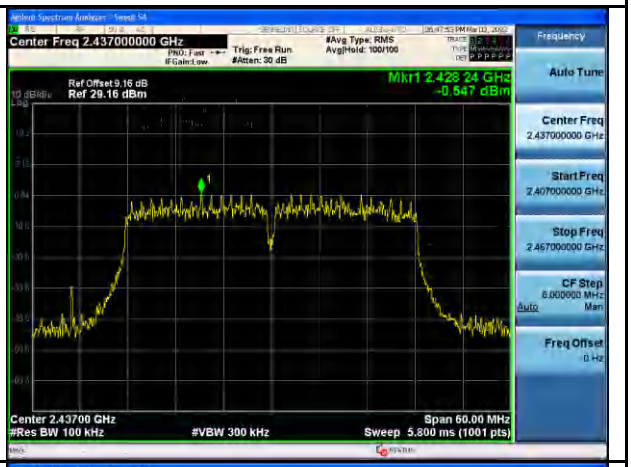
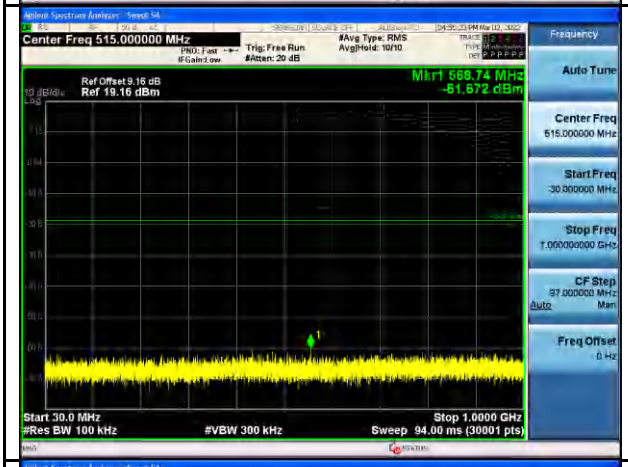
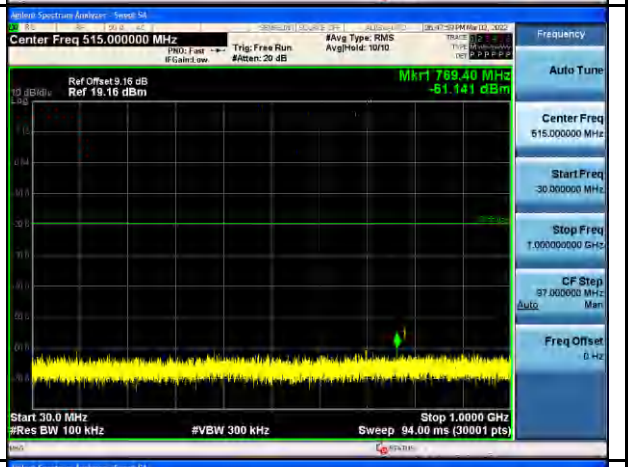
High Channel:

ANT 1	ANT 2
	
	
	

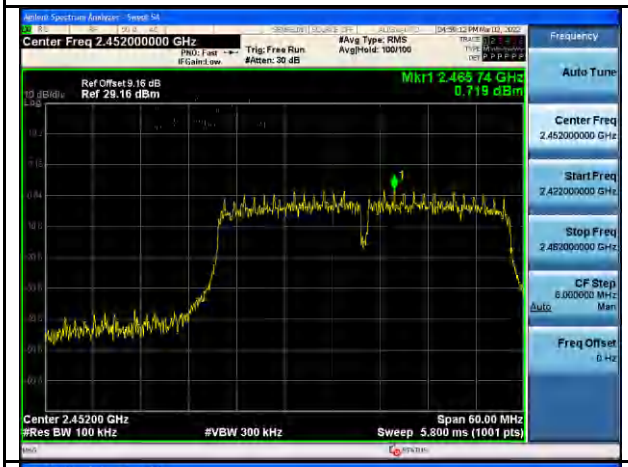
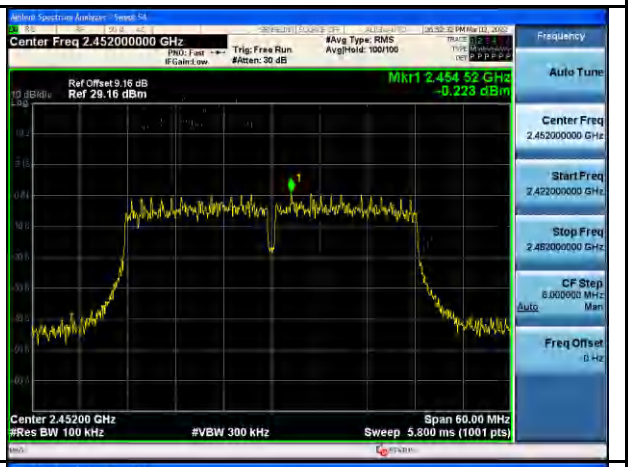
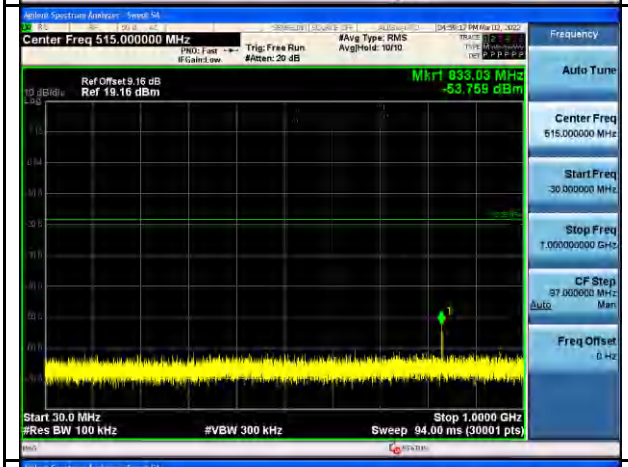
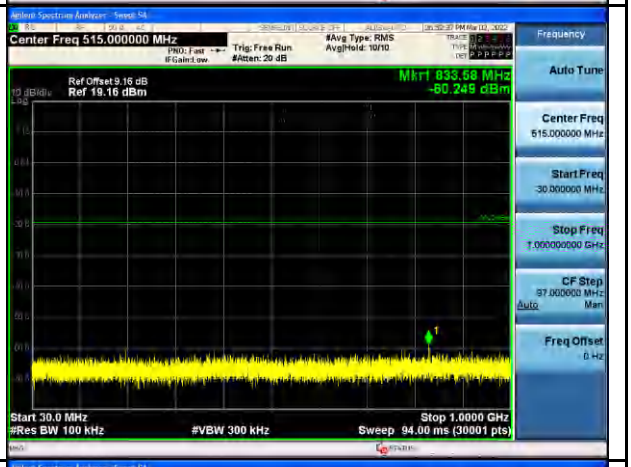
Wi-Fi 802.11 n(HT40) mode, MCS0
Low Channel:

ANT 1	ANT 2
	
	
	

Middle Channel:

ANT 1	ANT 2
	
	
	

High Channel:

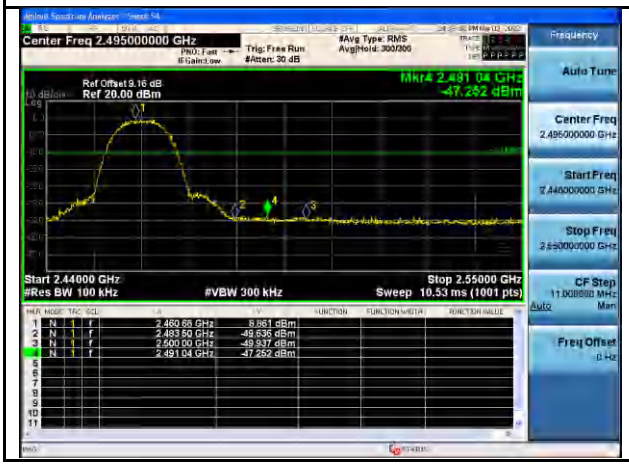
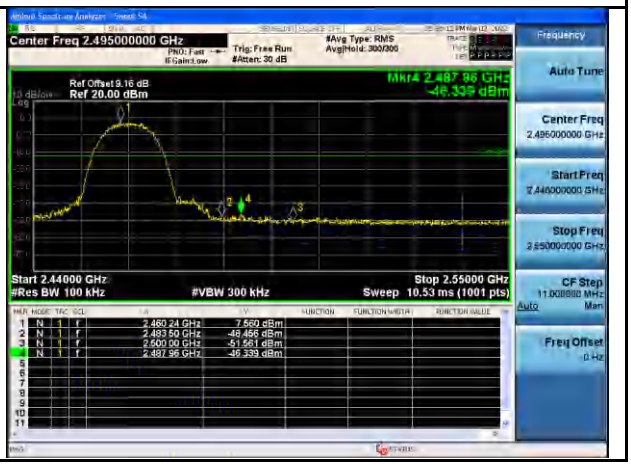
ANT 1	ANT 2
	
	
	

Wi-Fi 802.11 b mode, Band Edge

Low Channel:

ANT 1	ANT 2
	

High Channel:

ANT 1	ANT 2
	

Wi-Fi 802.11 g mode, Band Edge

Low Channel:

ANT 1	ANT 2
	

High Channel:

ANT 1	ANT 2
	

Wi-Fi 802.11 n(HT20) mode, Band Edge

Low Channel:

ANT 1	ANT 2
	

High Channel:

ANT 1	ANT 2
	

Wi-Fi 802.11 n(HT40) mode, Band Edge

Low Channel:

ANT 1	ANT 2
	

High Channel:

ANT 1	ANT 2
	

Appendix B.5: Test Results of Radiated Spurious Emissions

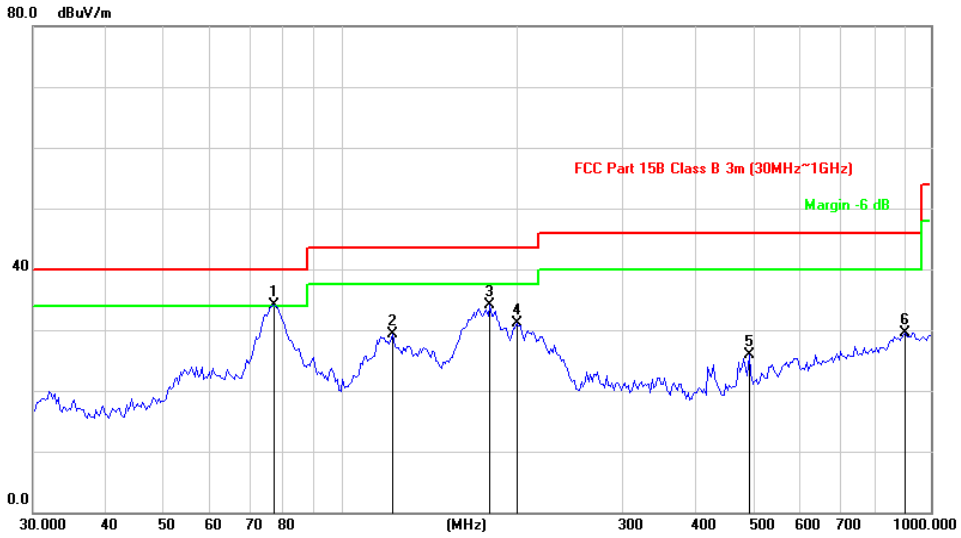
Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz - 26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

30MHz - 1GHz (Worst case)

Wi-Fi Module 1 (model: nxp8997):

EUT Information

EUT Name:	Smart interactive whiteboard
Model:	DHI-LCH65-MC410-B
Test Mode:	WIFI 2.4G_11b_Ch1
Test Voltage:	AC120V/60Hz
Remark:	Temp 23.6 Humi:46.2%
Test Standard:	FCC 15.247
Tested By:	Jim Xu
Reviewed By:	Tank Tan

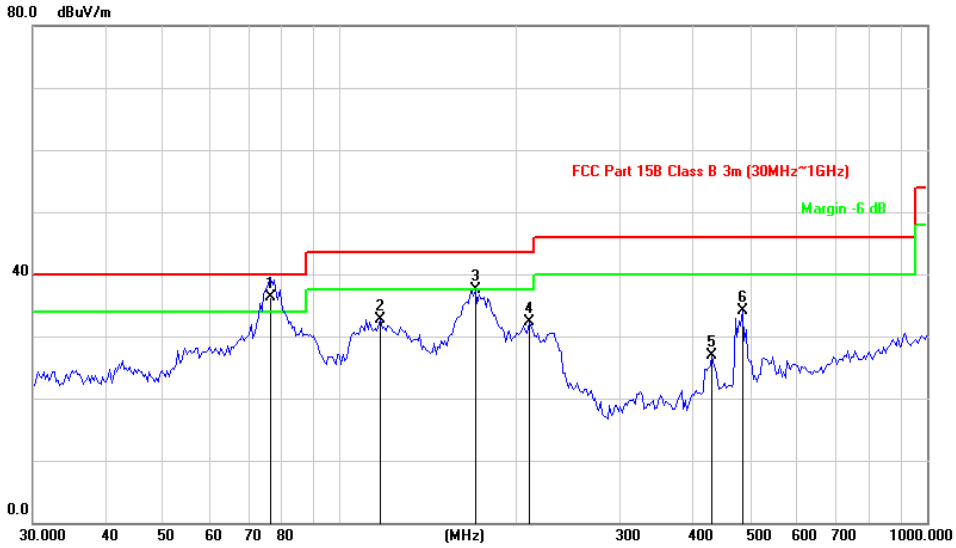


Critical_Freqs

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
76.9256	34.14	40.00	-5.86	200	H	54	-23.37
122.3187	29.35	43.50	-14.15	300	H	196	-21.89
178.7697	34.02	43.50	-9.48	100	H	120	-19.74
198.6424	31.13	43.50	-12.37	200	H	288	-22.48
491.7700	25.90	46.00	-20.10	100	H	230	-15.12
906.3038	29.51	46.00	-16.49	200	H	125	-6.77

EUT Information

EUT Name:	Smart interactive whiteboard
Model:	DHI-LCH65-MC410-B
Test Mode:	WIFI 2.4G_11b_Ch1
Test Voltage:	AC120V/60Hz
Remark:	Temp 23.6 Humi:46.2%
Test Standard:	FCC 15.247
Tested By:	Jim Xu
Reviewed By:	Tank Tan

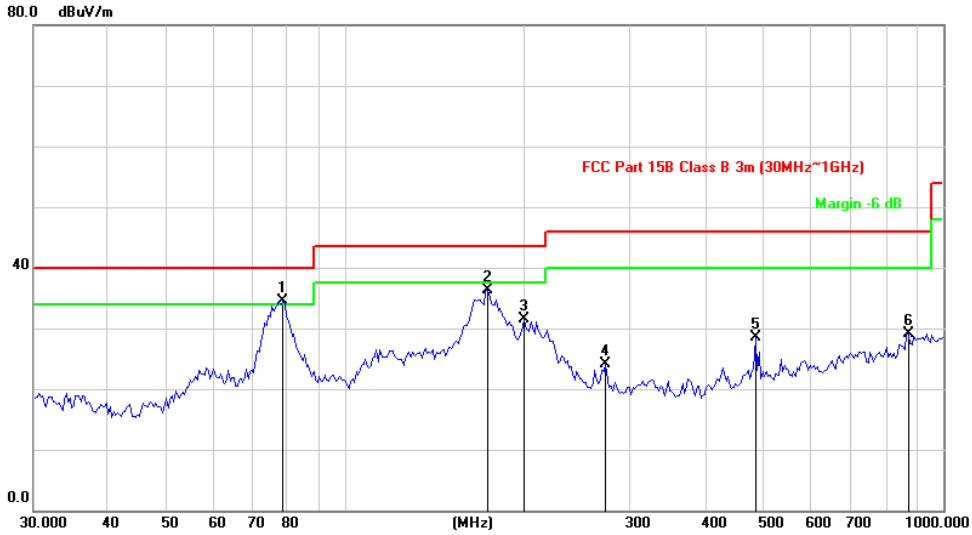


Critical_Freqs

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
76.3867	36.40	40.00	-3.60	100	V	177	-23.35
117.2686	32.67	43.50	-10.83	100	V	288	-22.24
170.1887	37.50	43.50	-6.00	200	V	156	-18.57
210.1294	32.35	43.50	-11.15	200	V	236	-22.33
430.3052	26.81	46.00	-19.19	300	V	125	-16.84
484.9067	34.19	46.00	-11.81	100	V	230	-15.29

EUT Information

EUT Name:	Smart interactive whiteboard
Model:	DHI-LCH65-MC410-B
Test Mode:	WIFI 2.4G_11b_Ch11
Test Voltage:	AC120V/60Hz
Remark:	Temp 23.6 Humi:46.2%
Test Standard:	FCC 15.247
Tested By:	Jim Xu
Reviewed By:	Tank Tan

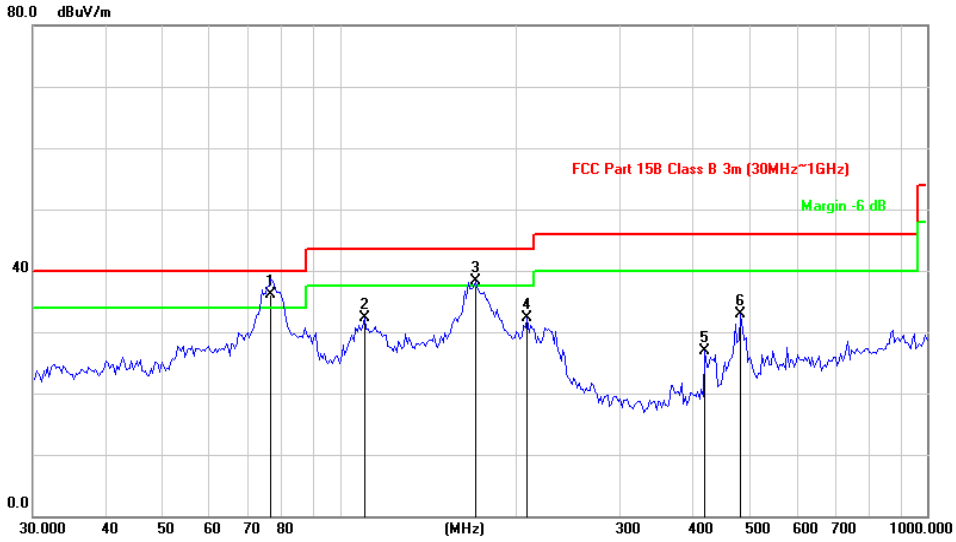


Critical_Freqs

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
78.5644	34.55	40.00	-5.45	100	H	247	-23.47
172.5973	36.24	43.50	-7.26	200	H	151	-18.90
198.6424	31.50	43.50	-12.00	200	H	56	-22.48
272.5246	24.11	46.00	-21.89	100	H	125	-20.63
484.9067	28.45	46.00	-17.55	300	H	288	-15.29
875.0131	29.17	46.00	-16.83	200	H	230	-7.41

EUT Information

EUT Name:	Smart interactive whiteboard
Model:	DHI-LCH65-MC410-B
Test Mode:	WIFI 2.4G_11b_Ch11
Test Voltage:	AC120V/60Hz
Remark:	Temp 23.6 Humi:46.2%
Test Standard:	FCC 15.247
Tested By:	Jim Xu
Reviewed By:	Tank Tan



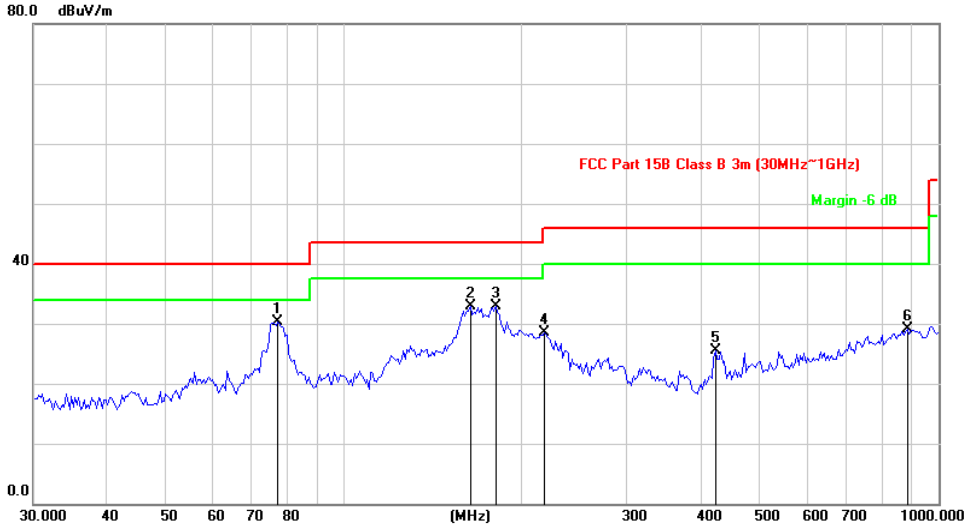
Critical_Freqs

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
76.3867	36.20	40.00	-3.80	100	V	185	-23.35
110.0818	32.23	43.50	-11.27	100	V	231	-22.94
170.1887	38.38	43.50	-5.12	300	V	125	-18.57
208.6579	32.28	43.50	-11.22	100	V	110	-22.37
418.3783	26.83	46.00	-19.17	200	V	122	-17.21
481.5110	32.82	46.00	-13.18	200	V	230	-15.39

Wi-Fi Module 2: (model: 8812 CU)

EUT Information

EUT Name:	Smart interactive whiteboard
Model:	DHI-LCH65-MC410-B
Test Mode:	WIFI 2.4G_11b_Ch1
Test Voltage:	AC120V/60Hz
Remark:	Temp 23.6 Humi:46.2%
Test Standard:	FCC 15.247
Tested By:	Jim Xu
Reviewed By:	Tank Tan

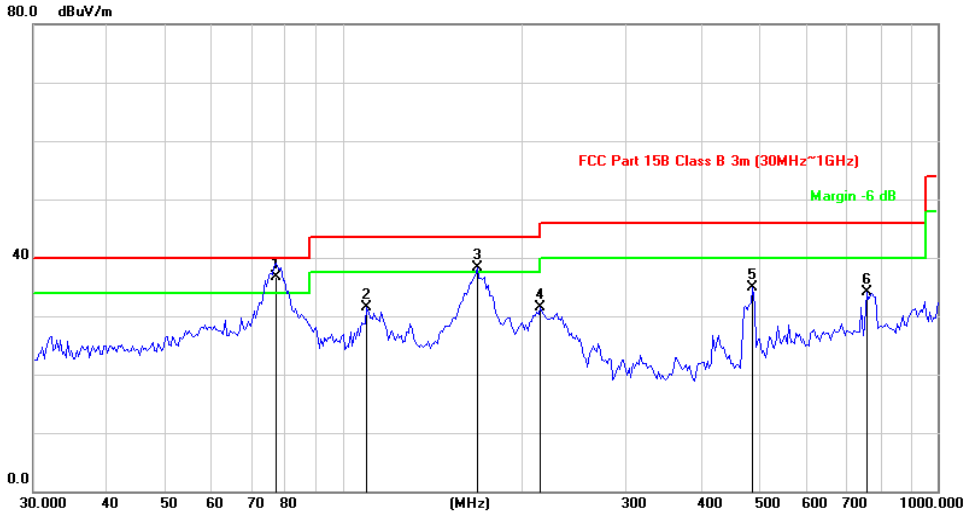


Critical_Freqs

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
77.4680	30.36	40.00	-9.64	300	H	84	-23.41
163.1622	32.91	43.50	-10.59	200	H	263	-18.78
180.0302	32.82	43.50	-10.68	200	H	198	-19.91
217.6435	28.56	46.00	-17.44	200	H	155	-22.09
421.3287	25.42	46.00	-20.58	100	H	310	-17.12
887.3976	29.07	46.00	-16.93	100	H	120	-7.12

EUT Information

EUT Name:	Smart interactive whiteboard
Model:	DHI-LCH65-MC410-B
Test Mode:	WIFI 2.4G_11b_Ch1
Test Voltage:	AC120V/60Hz
Remark:	Temp 23.6 Humi:46.2%
Test Standard:	FCC 15.247
Tested By:	Jim Xu
Reviewed By:	Tank Tan



Critical_Freqs

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
76.9256	36.80	40.00	-3.20	100	V	184	-23.37
109.3110	31.46	43.50	-12.04	300	V	128	-22.97
167.8136	38.27	43.50	-5.23	100	V	211	-18.62
214.6063	31.46	43.50	-12.04	300	V	254	-22.18
488.3263	34.88	46.00	-11.12	200	V	269	-15.21
760.2866	34.09	46.00	-11.91	100	V	45	-9.73